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All communications to be addressed:
"The Editor, Journal of Agriculture, Victoria Square, Adelaide."

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G. F. JENKINS,
Minister of Agriculture.

POINTS FOR PRODUCERS.

Central Eyre Peninsula Conference of Agricultural Bureau.

The Annual Conference of Central Eyre Peninsula Branches of the Agricultural Bureau has been arranged to take place at the Government Experimental Farm, Minnipa, on September 27th and 28th. In addition to the papers, which will be read by representatives of different Branches, and addresses by Officers of the Department, an opportunity will be taken of inspecting the work being carried out on the farm. The Department of Agriculture will be represented at this gathering by the Director (Professor Arthur J. Perkins), the Superintendent of Experimental Work (Mr. W. J. Spafford), the Vice-Chairman (Capt. S. A. White, C.M.B.O.U.), the Secretary of the Advisory Board of Agriculture (Mr. H. J. Finnis), and others. Capt. White will deliver a lecture, illustrated with lantern views, "Across Australia by Motor."

Conference of Hills Branches.

The Annual Conference of Hills Branches of the Agricultural Bureau is being arranged to take place at Balhannah on Thursday, October 11th.

Green Patches in Cereal Crops.

"The top dressing in the early spring, with a nitrogenous fertiliser, of patches of cereal crops which have gone yellow during the winter gives wonderful results in most cases, and in your conditions you will be wise to give it a trial," advises the Superintendent of Experimental Work (Mr. W. J. Spafford) in replying to an inquiry. "Both nitrate of soda and sulphate of ammonia are suitable forms in which to apply the nitrogen, a slight advantage resting with the nitrate of soda as a spring application. One pound of fertiliser to every 43 sq. yds. of crop will equal a dressing of 1cwt. per acre, but for your purpose of only invigorating patches in the crop it would pay to increase the amount used to between 1lb. for every 30 sq. yds. and 1lb. for every 20 sq. yds.

INQUIRY DEPARTMENT.

Any questions relating to methods of agriculture, horticulture, viticulture, dairying, &c., diseases of stock and poultry, insect and fungoid pests, the export of produce, and similar subjects, will be referred to the Government experts, and replies will be published in these pages for the benefit of producers generally. The name and address of the inquirer must accompany each question. Inquiries received from the question-boxes established by Branches of the Agricultural Bureau will be similarly dealt with. All correspondence should be addressed to "The Editor, *The Journal of Agriculture*, Adelaide."

"H. C. P.," Honiton, has cow with injury to the teats and the presence of lumps in the udder.

Reply—I should advise you to obtain a teat catheter. After sterilisation insert this carefully into the affected teat and irrigate out with a solution of boracic acid, one teaspoonful to a pint of water that has been previously boiled and allowed to cool. Irrigate twice daily. With regard to the lumps, these are due to a thickening on the lining of the teat and probably extending up into the milk basin. They are, as a rule, difficult to treat, and are very persistent. With regard to fistula, the teat itself, complete healing can only be hoped for when the animal is dried off. There should be no danger of blood poisoning as you suggest if careful antiseptic precautions are taken by thoroughly cleansing your hands and sterilisation of the catheter before inserting. In addition, the udder may be massaged with salad oil for the purpose of assisting the reduction of the lumps in the udder.

"E. J. B.," Wudinna, has foal passing watery fluid from navel.

Reply—This condition is known as pervious urachus, a condition occasionally remaining after birth. Normally this closes naturally. The fluid escaping is the urine coming from the bladder. By way of treatment I should advise you to obtain a strong wax thread, and with a needle pass it through the tissues at the back of the opening and bringing it forward and tying in a knot. If a portion of the tube is visible, endeavor to encircle this with the thread. This method should be effective in causing a permanent closure. The urine then will take its natural course and be passed in the ordinary way. Apply an antiseptic, such as carbolic acid water or tar water, on the outside to prevent the flies adhering.

"L. C. K.," Milang, reports cow stiff in hindquarters and unable to lift tail.

Reply—From your letter I gather that the condition described is due to an injury probably caused by the bull. In all probability it may be a fracture of one of the pelvic bones, which has probably implicated the spinal cord. This is shown by the condition of paralysis shown in the tail. I should advise you, in the way of treatment, not to interfere with the animal. Make her comfortable and see that she has plenty of laxative food. If she should go down support her with slings. Medicine in a case of this sort is not indicated.

"L. P.," Redhill, has mare with tender feet and decaying frogs.

Reply—It would appear from your letter that the animal's feet have become bruised whilst working without shoes. The sensitive frog probably has become involved with possibly the formation of pus, which would explain the condition of the frog such as you describe. I would advise you to move the shoes, poultice the feet with bran and linseed meal, to which a little fine powdered charcoal has been added. Afterwards carefully trim any ragged portions of the frog, at the same time examining for the presence of any pus which may have accumulated in the sole of the foot. If this is present the sole will be required to be bared with a knife to allow the escape of any accumulation. Afterwards

clean the foot and dress the frog with dry calomel, or a solution of zinc sulphate 4ozs., lead acetate 4ozs, once daily. When the shoes are replaced it will be advisable to supply a leather pad between the sole and the shoe.

Hon. Secretary, Agricultural Bureau, Nantawarra, reports heifer just in milk with a hole in the back of the teat.

Reply—This is a milk fistula and is due to an injury of some kind, such as may be inflicted by barbed wire. It is very difficult to treat these milk fistulae during the lactation period. When she goes dry again you can stimulate healing by the application of a caustic pencil (silver nitrate).

"M. M. P.," Pyap West, asks what quantity of alkaline solution should be injected into the womb prior to service; (2) can you recommend any other lotion for the same purpose; (3) what is a good book dealing with the artificial stinting of mares.

Reply—(1) About ½gall. of lukewarm water in which 4ozs. of bicarbonate of soda has been dissolved. (2) Weak solutions of disinfectants are sometimes used, such as a one in 5,000 perchloride of mercury solution. This material can be obtained in tabloid form, one being used to five pints of water. The latter solution should be used a day or two before the mare is expected to come in season. (3) Write to Messrs. A. M. Bickford & Sons, Currie Street, for their veterinary price list, which also contains instructions for use of the impregnator. The cost of the instrument is about 30s.

Hon. Secretary, Yadnarie Agricultural Bureau, asks (1) cure for warts on cows' teats, and (2) whether horses can be affected with blindness through eating "paddy" melons.

Reply—(1) Warts on cow's teat. Treatment depends upon the extent of the trouble. Some cases will respond to the application of castor oil after each milking. Large pedunculated warts can be removed by clipping off with a sharp pair of scissors. If there are many do only one or two at a time. The application of caustic is recommended, and for this purpose you may apply silver nitrate, which can be obtained in the form of a pencil or glacial acetic, and which may be applied carefully with a wooden match. Two or three applications will be necessary at intervals of some few days. In applying the silver nitrate wet slightly the surface of the wart and then apply the caustic. (2) Horses eating paddy melons. The blindness is due to horses eating the melons. I do not think it probable that blindness is ever caused by the juice reaching the eyes in the manner you suggest, though I believe that the frequent local application of the juice of the melon would cause the same trouble.

"V. B.," Beachport, has cow with a lump the size of a pea in the corner of the eye.

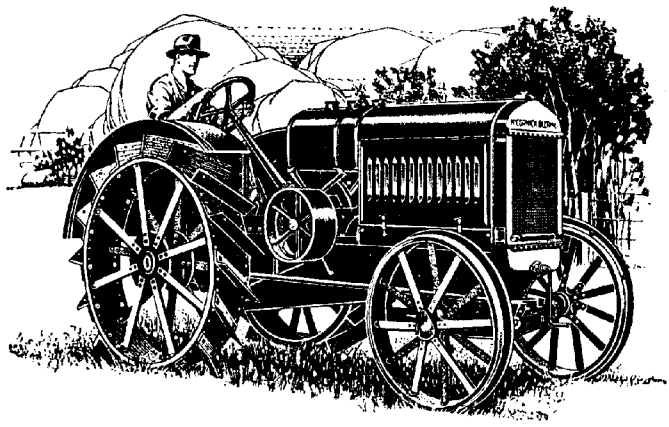
Reply—This is a new growth and it requires surgical removal. This should be done while the condition is easily dealt with, as at present. You will require a pair of forceps and a pair of sharp curved scissors. Secure the cow firmly. Seize the "haw" or third eyelid with the forceps and draw it outwards, remove the growth with the scissors, cutting away portion of the healthy tissue. Apply a little boracic lotion as a dressing. Make this by dissolving a dessertspoonful of boracic to a pint of water. Do not use caustic applications for the removal of this growth.

"J. O'C.," Monash, reports cow with stiffness of hindquarters and is only able to move about with great difficulty.

Reply—I advise you to give her one level teaspoonful of powdered nux vomica daily. Mix this with a little treacle and give on the tongue. I recommend you to supply your cows with salt and bonemeal, 1oz. of each twice daily. They should receive a well balanced ration, and the salt and bonemeal is best given in the feed.

Hon. Secretary, Agricultural Bureau, Shoal Bay, submits the following inquiries on behalf of Branch members—(1) Mr. O. B. Schaefer has aged bay mare with a swelling between forelegs.

Reply—Put her on soft laxative food and give her 1oz. epsom salts and one teaspoonful saltpetre twice daily for a week in her drinking water or mash. Bathe the swellings daily with warm disinfectant solution, such as carbolic, kerol, or izal, 1oz. to a gallon.



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(2) Mr. H. T. Noske asks reason for appearance of black lambs in a flock of sheep.

Reply—A pure Merino flock may occasionally produce a black lamb, and it is usually considered to be due to reversion to some far back ancestor.

Mr. W. O. Kruger, Hon. Secretary, Yadnarie Agricultural Bureau, has horse seven years old with large, soft lump on the shoulder.

Reply—Put him out of work and apply hot foments. If the swelling does not subside, apply a little red blister and watch for abscess formation, which will require evacuating and draining with a clean, sharp knife as soon as pus formation takes place.

"W. G. T.," Monash, reports *re* draught gelding which trembles from fetlock to stifle with exercise.

Reply—In the absence of any further information, the trembling can only be regarded as due to muscular weakness. Put him out of work for a few days and then give only light work. If there is any further development or lameness write again.

[Replies by F. MURRAY JONES, B.V.Sc., M.R.C.V.S., Assistant Government Veterinary Surgeon.]

Hon. Secretary, Miltalie Agricultural Bureau, asks which is the best method of poisoning foxes—arsenic or strychnine.

Reply—The best drug to use is strychnine. It is quicker in action. Arsenic is not usually used for this purpose. The animals have a good chance to get some distance before it becomes effective. The best way to use strychnine for the purpose of bait is to get a sheep or lamb carcass. Carefully score with a long knife channels in the flesh, sprinkling the powdered strychnine between the cut surfaces, then close them down. Do not handle the carcass any more than you can help with your hands.

"H. C. C.," Mallala, reports horses "tucked up," lie down and roll with feet in the air.

Reply—The symptoms described by you could be the result of several causes, such as indigestible food which has become impacted from foreign body such as sand, or even from flatulent colic caused by fermentative changes accompanied by formation of gases. It may be even produced, as you suggest, from damaged chaff, but not necessarily that condition known as forage poisoning. The best and safest treatment would be one pint of raw linseed oil and turpentine, 1oz., given as a drench. Follow up with a level teaspoonful of powdered nux vomica given in treacle once daily by smearing on tongue and teeth.

"L. G. R." Sandilands, has bull with a swollen sheath.

Reply—The condition may be due to a variety of causes, such as an accumulation of fatty material inside the sheath, grass seed, or accidental injury. I would advise you to thoroughly wash the swelling with soap and warm water, and then examine the entrance and inject a small quantity of salad oil into the sheath. To the swelling apply hot foments as often as possible. If the passage of urine is difficult, the animal will have to be cast, and the opening enlarged with a sharp knife. Injections of warm solution of Condy's fluid (claret color) into the sheath is also advisable.

"Dairyman," Georgetown, has cow which a few weeks ago had a bad "choke," and belched up a large quantity of chaff and blood.

Reply—Supply her with soft, easily digested food. Give her the following medicine:—Carbonate of ammonia, 1½ozs.; powdered nux vomica, ¾oz. Mix. Divide into 12 doses. Give one dose daily with a pint of cold water and a cupful of treacle. The number of doses of purgative medicine she received was excessive, and would weaken her considerably.

J. R.," Cooke's Plains, has horse that when castrated at two years old only one testicle was removed. The horse is now four years old, and the cord attached to the remaining testicle is as thick as a man's finger. The inquirer asks whether the removal of the testicle will result in excessive bleeding and risk of death.

Reply—There is always more risk in castrating an adult horse, and in this case the testicle is abnormally developed owing to the removal of one when he was two years old. I do not think, however, that the risk is a serious one, and would

suggest that he be castrated in the usual manner with the emasculator as soon as convenient. Prepare him by giving him plenty of green feed and little or no hard feed for a week or so. The principal danger is the subsequent bleeding. Put him in a clean, small grass paddock after the operation, and do not disturb him. If the bleeding appears excessive, stand him in a loose box, and put a bag which has been soaked in cold water over his loins. If it does not cease in a few hours, pack the cavity of the purse with a plug of clean dry cotton wool, and keep it in place by placing one stitch across the castration wound. Remove the following day, and cleanse the wound of all blood clots, &c.

"E. W. B.," Wilkawatt, has heifer, date of calving overdue by 10 days, and the animal strains and labors as if anxious to give birth to the calf.

Reply—The symptoms you describe point to a difficulty in calving, which may be due to many conditions, but the most likely is that the calf is not in the normal position for delivery. The only way to ascertain definitely is by an examination of the womb, which is done by inserting your hand and arm, which must be well oiled before doing so. Owing to the time which has elapsed since the symptoms were first noticed, the calf will probably be dead, and be putrifying, and you will have to assist the heifer in her efforts by, if possible, manipulating the calf so that it is in a normal position for delivery, or take it away in pieces.

SUDAN GRASS.

To a correspondent in the Farrell's Flat district, who sought information respecting Sudan grass, the following was forwarded by the Superintendent of Experimental Work (Mr. W. J. Spafford) :—

Time to Sow Sudan Grass.—Sudan grass seed will not germinate while the land is cold, so it would hardly be safe to sow the seed in your district before the middle of September, and in those few years in which the land remains wet and cold until this time, the seeding should be delayed still later.

Rate of Seed.—If it is to be grown in rows wide enough apart to allow of cultivation between the rows, 6lbs. to 8lbs. of seed per acre will be necessary, but if seeded through every hoe of the drill, 9lbs. to 12lbs. per acre will be required.

Amount of Super to Use.—The crop will easily use all the plant food supplied with 1cwt. superphosphate per acre, so not less than that amount should be used.

When to Cut for Hay.—Sudan grass will make a very fair hay if cut when the most of the flower heads have appeared, and at this stage the maximum quantity per acre will be received. If left longer, the hay will be rather hard and less digestible.

Best Time and Method of Grazing the Crop.—In your conditions the crop could be grazed any time that there is any growth worth eating off, if the ordinary precautions of grazing succulent feed stuff are followed, such as being careful when changing stock from one type of feed to another, putting stock on when hungry, grazing when wet, etc. Best grazing results will be got from this fodder, as with all other forage crops, if it is fed off rapidly, then spelled until good growth is again available.

DEPARTMENTAL DOINGS.

AGRICULTURE.

The quarterly meeting of the Mount Gambier Herd Testing Association was attended by the Director of Agriculture (Professor Arthur J. Perkins). The Director also attended the Pan-Pacific Conference as a delegate to the Agricultural Section, and delivered the opening address at the Conference of Pinnaroo Line Branches of the Agricultural Bureau.

HORTICULTURE.

During the past month the Horticultural Instructor (Mr. Geo. Quinn) attended a meeting of the Australian Fruit Council, held in Melbourne on August 7th. Mr. Quinn also attended the Conference of Pinnaroo Line Branches of the Agricultural Bureau.

The Horticultural Inspector and Instructor for the Northern District (Mr. J. B. Harris) during August addressed a meeting of the Agricultural Bureau at Light's Pass, and visited a number of fruit growers in the Melrose and Bagot's Well districts. Recently Mr. Harris has also given pruning demonstrations and lectures to Branches of the Bureau at Williamstown, Clare, and Virginia.

POULTRY.

The Poultry Expert (Mr. D. F. Laurie) attended the Conference of Southern Branches of the Agricultural Bureau. During the past month numerous suburban breeders have been visited, and on August 31st Mr. Laurie weighed the eggs in the recently concluded Seaton Park Egglaying Competition.

DAIRYING, ETC.

The Assistant Dairy Expert (Mr. H. J. Apps) visited and advised dairymen and factories in the following centres:—Woodside, Mount Gambier, Peterborough, Quorn, and Yongala. Mr. Apps delivered addresses at Woodside, Mannanarie, and Glencoe. The dairy herds in the Mount Gambier association were also inspected by this officer.

During August the Secretary Advisory Board (Mr. H. J. Finnis) attended Conferences of the Agricultural Bureau at Strathalbyn and Lameroo, and a field trial at Yarcowie. He also delivered an address at the inaugural meeting of the Light's Pass Branch of the Bureau.

Mr. F. C. Richards attended and addresed the annual meeting of the Two Wells Agricultural Bureau, and delivered an address at the Branch recently formed at Mannanarie.

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ADDRESS BEFORE AGRICULTURAL SECTION OF PAN-PACIFIC SCIENCE CONGRESS, 1923.

[By ARTHUR J. PERKINS, Director of Agriculture, South Australia.]

I have been asked by those responsible for this section to initiate a discussion on the associated questions of Agricultural Research and Agricultural Education And whilst I have felt honored by the request, I must confess to embarrassment as well. The thought that representatives from older countries might be disposed to cavil at our claim to speak on these subjects, was unavoidable; on reflection, however, rightly or wrongly, I have satisfied myself that we can make good this claim, however much our methods and work may have differed from what obtains elsewhere.

I am aware that there are some who would refuse recognition as "Research" to work, the objective of which is nakedly "utilitarian." If, in this connection "utility" is to be banned and the search after truth to be hedged within austere and narrow lines, somewhat on the principle of "art for art's sake," then I shall be forced to admit that our claims to recognition are probably slender enough. But is it not legitimate to ask whether Research, like other less exalted forms of human activity, must not perforce adapt itself to its environment, or else starve for lack of sustenance? Here in Australia, we have found ourselves, a mere handful of men and women, confronted by conditions for the most part unknown, without a body of inherited tradition to guide us, and the wilderness to conquer. Economically, we were bound from the outset to attempts to wring a livelihood from the land, notwithstanding our ignorance of the conditions that surrounded us; and equally inevitably, as it seems to me, when the need of them came to be felt, Agricultural Research and Agricultural Education would be driven along "utilitarian" lines. We have had, therefore, to deal with the difficulties and hard facts of the day, leaving refinement and philosophy for the morrow. Broadly speaking, then, with us Agricultural Research has sought to take the place of that somewhat rigid traditional lore, which guides the old-world farmer and at times deadens his powers of initiative. Similarly, Agricultural Education has hitherto sought to impart to our youth a strictly practical training, and a mastery over the details of work rather than a profound understanding of the eternal principles that may be supposed to underlie them.

I offer no apology for so materialistic an outlook, beyond the statement that it is the tribute we have had to pay to such progress as we may have achieved. Moreover, our minds are still in the receptive stage and a change in attitude will not be difficult to us should future circumstances appear to warrant it.

Some of the difficulties we have had to face in the past I shall touch upon lightly. In the first place, no degree of Research was practicable until circumstances had rendered the local atmosphere favorable to its prosecution. Early settlers struggling against pioneering conditions would be blissfully unconscious of any need of it: and only when the repeated failures of those who had brought over with them ancestral traditions of other lands, had become glaringly apparent, did the need for "utilitarian" Research begin to make itself felt. We believe that during the life-time of the present generation much has been done towards meeting the requirements of the farming community, and that our rapidly rising agricultural production is some evidence in our favor.

Again, "utilitarian" Research and "pure" Research do not appeal to the same public. Of the two, our public is infinitely more exacting, as it is more extended than that of those whose goal is infinity. The work itself and the methods involved are usually a matter of indifference to our public; results which can be speedily converted into economic good is its only concern; and unfortunately its impatience is frequently such as to sterilise efforts, which might otherwise have proved fruitful. The seriousness of this difficulty can be appreciated only by those who have had to contend with it: it is in my view responsible for much that has hitherto been left undone, and what is worse, for much that has been badly done.

I have referred to our rapidly expanding agricultural production as some evidence of the success of local "utilitarian" Research. I propose illustrating the position by a few figures before passing on to details. In the first place let it be noted that our history as an agricultural community does not extend further back than four generations for a small section of the Continent and not more than two and three for the vast balance. Our rawness cannot, therefore, be gainsaid, and in the circumstances an Agricultural and Pastoral Revenue (1921) of about £260,000,000 is something very much to the credit of little over five and a half million people. It represents over £47 per head of population. Only 15 years earlier (1906) this revenue was little more than £80,000,000, or £29 9s. 6d. per head of population.

If it be asked in what manner Research and Education have contributed to the rapidity of our material progress, I shall say that

three generations ago the agricultural possibilities of the country were unknown quantities; that after early skimming of obvious natural fertility the first two generations fought unaided a gradually losing battle against Nature; and that it was left to the third generation, assisted by Research and Education, to turn the tide of battle and lift Agriculture to its present condition of prosperity and affluence. . The special part played by these two factors is perhaps difficult to particularise apart from details. Nevertheless, attention may be drawn in this connection to the systematic accumulation of of meteorological data throughout the Commonwealth: it constitutes Research work of first importance and has rendered possible the early classification of districts and their agricultural possibilities. As early as 1865 the late Mr. G. W. Goyder, Surveyor-General in the State of South Australia, was able to trace over the map of South Australia a rainfall line, north of which farmers would attempt to grow wheat at their peril. And even to-day we are able to admire the accuracy with which Goyder's line was drawn. Without meteorological research progress would have been slow indeed and the road to agricultural settlement strewn with economic wrecks.

It would be quite impossible in the course of a short address even to summarise all that has been done in this new country towards laying the foundations of rational agricultural practice over a great variety of soils and climates; nor do I propose making the attempt. I shall, however, endeavour to illustrate the general position by a rapid reference to "Wheat," our main crop, and one with which I am perhaps most familiar.

We have, I believe, made remarkable progress with wheat, and notwithstanding our relatively low mean yields, I question whether to-day there is any other country of similar area making better use of its economic, climatic, and soil conditions for the same purpose.

In 1860 we had about 644,000 acres under wheat, yielding 10½ million bushels: 60 years later, in 1920, we had over 9,000,000 acres, yielding approximately 146 million bushels. I am aware that these figures are dwarfed by the production of countries such as the United States and Russia: on a population basis, however, we can challenge comparison with any country.

Within the space of three generations our people have learnt how to grow wheat in a country, the general conditions of which were at the outset totally unknown. By this I wish to assert that to-day our best farmers are extracting from the land the highest yields that local conditions permit of; and this, I submit, is no mean feat for so brief a period of time. That there is still ample room for improvement in

the mean yields of districts and States, may be freely admitted; and towards this end, Education, in its broadest meaning, may be said already to have set its hand to the plough.

Let us analyse what the growing of maximum wheat crops really implies, and note how much personal Research and Educational effort must necessarily have preceded it.

There was first to determine the extent to which this hardy crop would adapt itself to local vagaries of climate. To the extent that latitude is an index to climate we had reason for hope in so far as the southern portion of the Continent was concerned; and hope has been justified, by experience, at all events, south of the 32nd parallel, which, relatively to the Northern Hemisphere, suggested climatic conditions similar to those obtaining over Southern Europe and Northern Africa.

We discovered in the course of time that over what has come to be known as the Wheat Belt rain was confined to the winter and spring months of the year, a period varying with seasons from five to eight months. Such crops as were sown had to grow under these limitations, and a general system of cultivation adapted to them had to be developed.

Unfortunately, profound economic differences debarred us from taking advantage of the practices of countries climatically similar to our own; and where there was economic approximation, climates usually differed. We were driven back, therefore, on our own efforts and Research. The relatively short growing period made it imperative that seeding should coincide with the first autumnal rains, and in certain seasons should even anticipate them. Moreover, painful experience brought home to pioneers the fastidiousness of wheat, in the matter of seed-bed and the impossibility of adequately preparing it, except in the presence of a sufficiency of moisture. These facts led eventually first to the breaking up of land intended for wheat in the winter preceding seeding operations, and gradually, in the course of time, as a matter of experience and Research, to the eight or nine months of clean, well-worked bare fallow, which to-day precedes wheat over the great bulk of our wheat-growing country. It is easy to object that this is a practice that has been in use elsewhere centuries ago; it is nevertheless true that in isolated virgin country it had to be recreated afresh, and that its general adoption in a brief space of time over a vast area of country has necessarily involved much personal Research and Educational work. To-day the practice is all but universal in Australia, and will probably continue to be

so over the bulk of the country. It seems probable that the practice of preceding wheat by fallow or other suitable crops will always be restricted to limited areas of country only.

Next, consideration had to be given to the type of wheat that could be grown to best advantage under our special conditions. It should be stated here that I am making no attempt to set out these points in strict historic sequence, and that doubtless the question of suitable varieties puzzled our pioneer farmers long before the system of tillage had become more or less standardised. At the outset we depended naturally upon importations from abroad, and from time to time practically every available type has received more or less extended local trial, from the slow-growing, carpet-like winter wheats of colder countries to the fast-growing spring types of wheat from countries with relatively short growing periods. To-day, on the other hand, over the nine to ten million acres which we sow annually to wheat, it would be hard to find any important area under wheat of foreign origin. The vast majority of our wheats have been raised locally, and I doubt whether anywhere else in the world is to be found a finer collection of varieties, maintained systematically at a high standard of production by rigid and continuous selection. Indeed, the tide of importation has now turned and there is already evidence that Australian varieties are making their way into other countries similarly situated. In creating these varieties we have aimed at disease-resistance, high yields, quality of flour, harvesting convenience, resistance to rough weather, &c.; and all this implies research work of no mean order, whilst the general acceptance of new varieties by the farming community is a tribute to the educational effort which must have preceded acceptance. I have felt the invidiousness of mentioning names in an address such as this, and had hoped to be able to avoid it. Nevertheless, I cannot in this connection resist the temptation to do honor to the late William Farrer, the father of all our wheat breeders, who set himself the task of developing rust-proof wheats and ultimately left to us some of the best all-round varieties we possess to-day. His name will not be soon forgotten in Australia.

Another difficulty that we have solved in original manner was how to feed our working teams, without whose assistance wheat could not have been raised. Contrary to the practice of other countries we made the wheat field keep itself. In other words we were free from the natural inherited prejudices of older countries, in which it would have been deemed a sin to feed wheat to any but human beings, and we made hay of it. This may seem simple enough; nevertheless it was

an innovation and only research could indicate how this hay should be made and handled and fed to best advantage. This we have done and our experience is available for the use of others.

Like others, we have had to face parasitic disease and its consequences, and have succeeded in circumventing, if not in overcoming it. Red rust, once virulent, is to-day more or less unimportant. "Take-all," the consequences of virulent development of the wheat-stem killer, in new roughly tilled country, has proved serious at times, but can be controlled. And similarly with other minor diseases that have affected our crops from time to time.

Again, not only theoretically, but practically also, the local application of manures and fertilisers has received satisfactory solution. I need not perhaps recall—it is perhaps well known to all of you—that hitherto in Australia phosphatic manures alone appear to have given uniformly satisfactory results with wheat, and of these the water soluble superphosphate is in all but universal use. We are more particularly concerned with facts which bear witness to Research rather than with Research itself. I shall not, therefore, attempt to explain why this should be so; it is sufficient to note that to-day the farmer who sows wheat without superphosphate is the exception rather than the rule. It is estimated that our wheat fields absorb about 375,000 tons per annum. We lay no claim to the discovery of superphosphate; we were, however, quick to recognise its value, and moreover were among the first to demonstrate on a large scale the stimulating effects of what elsewhere would be considered very light dressings of this manure.

I am of the opinion, too, that we have proved very definitely that under our conditions of climate, wheat can be grown very advantageously on soils far lighter in texture than is commonly recognised in other countries. We have an abundance of soils of this type—mallee lands we call them—which elsewhere would be relegated to barley, or even rye, but on which we have been able to grow wheat quite satisfactorily. Indeed, in years of light rainfall it is generally from these light soils that we look for our most successful crops.

But what could we have possibly done, what would all our efforts and research have availed, had not those with mechanical talent taken up the tale and assisted towards the solution of the ever present problem of labor shortage? It is no exaggeration to state that without the assistance of our manufacturers of agricultural machinery, and of local mechanical genius, there would have been no agricultural development in this country; we should still have continued a purely pastoral sparsely populated country with enough acres under wheat to satisfy

local demands, but nothing more. The implements which are peculiarly our own, the fruit of local research and study, which have rendered possible the growing of wheat, are the stump-jump plough, the Ridley stripper, the complete harvester, the seed broadcaster, large cultivators, &c. Some of these, no doubt, are out-of-date to-day; all, however, have in their time contributed adequately towards the foundations of successful agricultural settlement.

Lastly, Research and practical experience have taught the farmer how best to join wheat-growing and sheep in profitable association: how to take advantage of natural pasture always available when wheat is not actually in the ground: how on occasion to raise forage catch-crops to make good possible grazing deficiency: and how, in the end, to build up a more complex system of farming with wheat as the main but not necessarily the exclusive crop grown.

In briefest of outline I have endeavoured to sketch out the main problems which have confronted the wheat-grower in the past, and for lack of time and space, I must leave it to the imagination as to how they have been successfully solved. There are few who would care to deny that behind their solution must have lain a solid backing of study and research. But, in our brief agricultural career we have done vastly more than grow wheat, and in the matter of other crops corresponding difficulties have been met and overcome in like manner. I need refer to but a few of our most successful ventures. The pastoralist starting with very indifferent material has built up the Australian Merino, which to-day, in its finest representatives, is probably second to none in the world. The great sugar industry of Queensland has had to overcome countless difficulties before attaining its present-day commanding position. Equally remarkable has been the wonderful development of our irrigation areas; of our vine and fruit industries; of our dairying and poultry industries; of the Victorian sugar beet and tobacco industries, &c. Nobody can contend that in a new country these various lines of rural activity could have been raised to economic stability in so brief a period of time without the assistance of much patient research and work.

Such, then, is the case for "utilitarian" Research, in which the work of the men of the fields has perhaps necessarily been more in evidence than that of their brethren of the laboratories. It must not, however, be supposed that the work of the latter lacks of appreciation in our midst, particularly when its bearing on everyday affairs has been made sufficiently clear. Agricultural Research, if it has any meaning, must, I take it, seek a wider audience than those of high scientific attainments: it must ultimately make appeal to the journeymen on whose behalf it is presumably undertaken. And no

inconsiderable personal experience has taught me that in Australia, at all events, farmers are for the most part keenly alive to the value of work of this kind, nor are they slow to show their appreciation of it, if you but gain their confidence. If I stress this point, it is because I am convinced that to flourish in our midst, Agricultural Research must have the backing of those whom it is intended to serve. We recognise the need for continued Research work in all the many phases of rural activity that have hitherto occupied our attention; and we know of others the depths of which we have still to plumb. The question that should concern us most, therefore, should be how best to smooth the way for those whose special duty it will be to engage in future Research. It seems to me that three avenues offer themselves for such energy as we may have available for the purpose; whether we should avail ourselves of all or not, is perhaps a matter for future consideration. I have in mind at the present moment (1) State institutions, (2) private initiative, and (3) the Universities.

Hitherto, apart from the efforts of the men of the fields, it is in State institutions mainly that Agricultural Research has received attention. They suffer, however, from severe disabilities which frequently cripple the effectiveness of such work as may be attempted. Among them we may quote the hampering ties of administrative work, the lack of continuity in general policy, the impatient cry for results and at times political influence. Nevertheless, and notwithstanding these disabilities, it would be folly to rule out State institutions as centres of Research, whenever their occupants come under its inspiration.

Research is so much the matter of the man rather than of his equipment, and of the funds available to him that private initiative in the matter, independent of the control of others, appears to me ideal, when time, circumstances, and the individual meet. I know, for instance, of no more fruitful work in this connection than that of Lawes and Gilbert. But, unfortunately, how often do we find adequate training, adequate appreciation of fundamental questions and adequate enthusiasm and capacity for work suitably combined with adequate personal means? The freedom of choice and action which must accompany such a combination helps to create an atmosphere ideal for the prosecution of Research; and it was largely by its favor that in his laborious life Charles Darwin was able to do what he did. Nevertheless, let us admit the rareness of the circumstances, and recognise that to a very limited degree only can Research be left to private initiative. But when we chance upon it struggling to give

effect to a faith that is within, then surely our interest should be lent towards securing for it public recognition, and if need be, public assistance.

Lastly, we come to the Universities, who here in Australia somewhat tardily, and mayhap somewhat diffidently, are beginning to acquire agricultural interests, and in time, one may hope, will develop a special agricultural policy and outlook of their own. It would seem that very shortly Chairs of Agriculture will be attached to all of our Universities, and we must assume that the claims of Agricultural Research will appeal strongly to their incumbents. As to whether, apart from the few who aspire to purely professional careers, local conditions are as yet ripe for University training in agriculture, there may be room for difference of opinion; but there can be none as to the desirability of the prosecution of Research by the Universities. Indeed, it is perhaps permissible to put the position more emphatically and to maintain that it is the bounden duty of the Universities to make adequate provision for Research. The usual retort is simple and obvious enough, namely, that there are no funds available for the purpose. That may well be and may even continue so indefinitely, if we have nothing better to offer than passiveness. Refusal to act on the grounds that funds are inadequate always seems to me to argue but chilly love for Research. If I may be pardoned for raking in a matter of personal experience, I shall state that work done and results achieved under difficulties, eventually act as magnets towards public funds. There is no such thing as wasted effort, if it be but launched in the right direction, and even if it go awry, it is surely better than inaction. Moveover, I have yet to learn that the world's best work has come from the most generously endowed institutions. After all it is the man that counts, not his equipment: and let him but show inclination and power to act and equipment will follow soon enough. I take it, therefore that it is mainly to the Universities that we must look for the future extension of Agricultural Research.

One more point I must make in this connection, which to some, from its very obviousness, may perhaps seem almost superfluous, I hold very strongly that no University should attempt Agricultural Research or Agricultural Education that has not access to ample farm-lands to keep its staff in touch with realities. These lands, in my view, should be immediately controlled by the Professor of Agriculture, whose presence and authority would ensure that Research would take place along agricultural lines. I have the highest respect for the Sciences and realise that Agriculture can make little or no progress without their aid: nevertheless, I feel that in such matters the Sciences are al-

ready securely entrenched and well able to look after their own interests, whenever they have a mind thereto. Agriculture, on the other hand, a new comer, perhaps an intruder in academic circles, is likely to be jockeyed out of its rights, unless its interests are in sympathetic and understanding hands. Hence, my firm conviction that at all times the Head of a University Agricultural Department should be an adequately trained agriculturist.

I am beginning to realise that except by implication I have said little or nothing about Agricultural Education: and time does not now admit of more than brief reference to this important subject. I am compelled, therefore, to confine myself to a few generalities.

I believe that the type of Agricultural Education hitherto adopted by the Australian States has adequately met the general requirements of our special position. In the first place we have recognised that circumstances were such that only the merest fraction of the future tillers of the soil could hope to acquire adequate technical training away from home. Secondly, we have thought it imperative that the few able to attend our Agricultural Colleges should as a matter of every day routine take part in ordinary farm work to the extent of 50 per cent. of their time. It follows that all students have necessarily been boarders, and that numbers in attendance have been strictly limited by the capacity of the College Farm adequately to provide work. It seems probable that in the course of time we shall be compelled to review this practice, particularly if applicants in excess of those that can be accommodated become clamorous for admission. We can, perhaps, legitimately assume that farmers' sons who follow in the wake of College teams are generally wasting their time, and might be occupied more profitably. As a matter of principle they might be definitely excused from farm work of any kind: they might even be enrolled as day boarders: both of which would admit of larger attendances at the Colleges without much additional cost.

The men our Colleges have hitherto turned out have for the most part given good account of themselves on the land, and in many instances in purely professional positions. It is a moot point whether higher University training would help them much in their normal pursuits as farmers, fruit-growers, dairymen, &c., and it is probable that in the main it will be availed of by those only who have in view professional appointments.

I have said nothing of the early training which precedes admission to the Agricultural College, and which in nine cases out of ten represents the only schooling of the ordinary agriculturist. I have said nothing about this training because I cannot bring myself to admit that

we have any right to force specialisation upon children until the very last minute when the final decision must be made. Personally, apart from the question of equipment and teaching facilities I can see no reason why the early education of the country lad should differ essentially from that of his city cousin.

Agriculture, on the other hand, has infinitely greater interest in adult education, extending beyond school walls and reaching out to the man who has already taken up the burdens of life. The Australian States have, I believe, recognised their duties to those who have gone out into the wilderness, and have in various ways endeavoured to give effect to them. State Departments of Expert Officers have been created, publications have been issued, lectures and demonstrations have been given, and settlers have been encouraged to join in local units for the discussion of technical and social matters, &c. No doubt much remains to be done in this direction, and will no doubt be done in the course of time. Speaking, however, for my own State, South Australia, I believe that I can say with confidence that had it not been for these educational efforts, our agricultural progress would have been infinitely slower than it has been; and the same can probably be said of neighboring States.

I feel that I must now bring to a close these somewhat rambling remarks, with the consciousnesss that I have not done justice to two very important subjects. I can, however, comfort myself with the thought that I was not asked to deal with these subjects exhaustively, but merely to present them in such a fashion as to lead to a general discussion. In the circumstances, imperfect treatment of the subject has its advantage in that it affords wider scope for criticism.

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AGRICULTURAL EXPERIMENTS—REPORT FOR THE YEAR 1922-1923.

[By W. J. SPAFFORD, Superintendent of Experimental Work.]

EXPERIMENTS AT BUTLER.

[Conducted by Mr. C. F. Jericho.]

In 1916, wheat-growing experiments were commenced in the hundred of Butler, having as their objects—(1) The discovery of the most profitable dressing of superphosphate to apply to wheat crops in this particular locality; and (2) a comparison of the returns secured from varieties of wheats on bare fallow.

MANURIAL PLOTS AT BUTLER, 1922.

The manurial plots were commenced in 1916, and are permanently pegged, so that each year that the blocks are sown with wheat, each plot will receive exactly the same manuring. This treatment does away with any chance of the plots receiving any benefits from residual fertilisers to which they are not entitled. The more often the plots are cropped the better will they show the effects of the different dressings of manure.

Below will be found the yields of grain received from the wheat grown in the manurial plots in 1922:—

Yields of Manurial Plots—Butler, 1922.

Plot.	Manure per Acre.	Bush.	lbs.
1.	No manure	7	52
2.	½cwt. superphosphate	12	52
3.	1cwt. superphosphate	15	19
4.	2cwts. superphosphate	17	28
5.	3cwts. superphosphate	18	8

Gluyas wheat used in all plots at the rate of 60lbs. seed to the acre.

Yields of Manurial Plots—Butler, 1916-1922.

Year.	Yield per Acre. Plot 1. No Manure. B.	L.	Plot 2. ½cwt. Super. B.	L.	Plot 3. 1cwt. Super. B.	L.	Plot 4. 2cwts. Super. B.	L.	Plot 5. 3cwts. Super. B.	L.	Rainfall.
	D.	L.									In.
1916	12	12	16	17	16	32	23	32	28	31	15.79
1917	13	30	20	36	23	23	27	48	29	46	20.78
1918	8	8	12	54	14	24	19	53	19	56	9.87
1919	10	14	12	26	15	9	16	42	17	59	10.93
1920	10	42	18	4	23	13	25	29	25	8	14.79
1921	13	27	14	50	16	37	19	11	18	16	19.08
1922	7	52	15	52	15	19	17	28	18	8	11.54
Means	10	52	15	26	17	48	21	26	22	92	14.68

The average returns for the application of various quantities of superphosphate very clearly show the need in the hundred of Butler of what are usually considered comparatively heavy dressings of this form of fertiliser. The following table, however, sets this out much more clearly, and distinctly shows that the use of manure for wheat growing is purely a business proposition—so much increased return for a given outlay. In the calculations, superphosphate is taken at 5s. per hundredweight, and wheat valued at 3s. 3d. per bushel:—

Increased Yields and Net Increased Value of Wheat from the Use of Superphosphate—Butler, 1916-1922.

Manuring per Acre.	Yields, 1916-1922.	Increased Yields over no Manure.	Net Value of Increase. per Acre.
	B. L.	B. L.	£ s. d.
No manure	10 52	—	—
½cwt. superphosphate	15 26	4 34	0 12 4
1cwt. superphosphate	17 48	6 56	0 17 6
2cwts. superphosphate	21 26	10 34	1 4 4
3cwts. superphosphate	22 32	11 40	1 2 11

Wheat Variety Tests at Butler.

Besides the manurial plots mentioned above, Mr. Jericho is conducting wheat variety tests, each variety being sown on land that was in bare fallow, at 1bush. per acre, with 2cwts. superphosphate. In the table arranged below will be found the yields from the wheat varieties grown at the hundred of Butler for 1918-1922:—

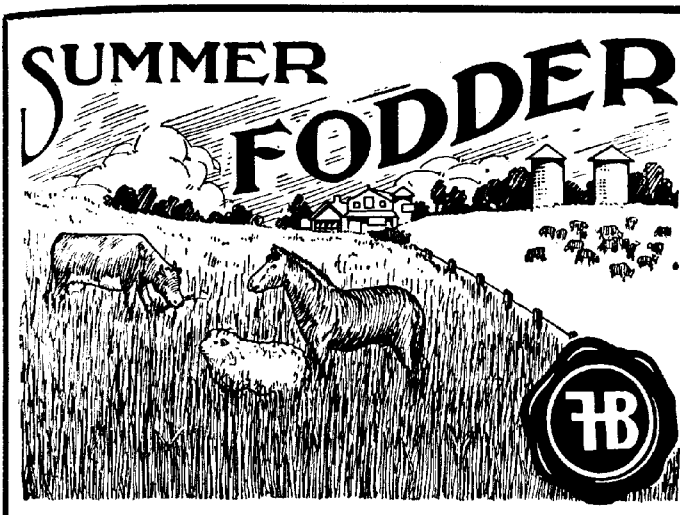
Yields of Wheat Varieties—Butler, 1918-1922.

Variety.	Yield per Acre. 1918.	1919.	1920.	1921.	1922.	Means, 1918-1922.
	B. L.	B. L.	B. L.	B. L.	B. L.	B. L.
Gluyas	16 42	14 22	19 1	20 2	17 30	17 31
Caliph	12 24	16 31	12 51	18 50	15 53	15 18
Late Gluyas	—	—	—	25 30	15 34	—
Ford	—	—	—	—	15 42	—
Felix	—	—	—	—	14 3	—
Sultan	—	—	—	—	13 56	—
College Eclipse	14 23	16 36	15 22	19 24	—	—
Queen Fan	10 38	15 40	11 58	22 21	—	—
Canaan	—	—	12 30	19 19	—	—
Rainfall	9.87in.	10.93in.	14.79in.	19.08in.	11.54in.	13.24in.

EXPERIMENTS AT YEELANNA.

[Conducted by Mr. I. J. Williams.]

In 1918 arrangements were made with Mr. I. J. Williams, of Yeelanna, to have experimental plots carried out on his farm, and it was decided that manurial plots and a rotation of crops experiment should be conducted there. As some of the plots were to be sown on



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fallow, the land had to be prepared that year, and the first crops were sown in 1919. The experiments arranged consist of:—(1) Manurial plots, testing different forms of phosphate fertilisers, and (2) rotation of crops.

Manurial Plots at Yeelanna.

The manurial experiment consists of 10 1-acre plots, five of which are sown to wheat each year, and the remainder are bare fallowed. The plots are permanently pegged, and so worked that each time every individual plot is in crop, it receives the same manuring. The yields of grain received from these plots since their inception—1919 to 1922—are set out below:—

Yields of Manurial Plots—Yeelanna, 1919-1922.

Plot.	Manuring per Acre.	1919.		1920.		1921.		1922.		Means, 1919-1922.	
		B.	L.	B.	L.	B.	L.	B.	L.	B.	L.
1.	1cwt. suprephosphate ..	21	27	14	0	26	0	5	35	16	45
2.	1cwt. basic slag	7	30	11	23	5	2	Failure		5	59
3.	1cwt. bonedust	1	50	9	59	3	30	Failure		3	50
4.	1cwt. super, 5cwts. lime .	7	40	13	4	14	6	4	22	9	48
5.	No manure	1	56	7	20	3	30	Failure		3	11

The returns secured from these manurial plots certainly show some startling differences, and at present it appears that something other than the kinds of phosphates used on the various plots is having an influence on the results. What the reason of these marked variations is, it is impossible to say, because nothing connected with these experimental plots, likely to explain the differences, was noticeable. The crops have been more or less badly affected by "take-all" (*Ophiobolus graminis*) in each of the four seasons, and if the manurial treatment given to Plot 4 had not been included in this series of experiments, it would have appeared that superphosphate was controlling the ravages of this disease of wheat, better than the other forms of phosphates, but there is too great a discrepancy between the results secured from Plots 1 and 4 for this to be a full explanation.

ROTATION PLOTS—YEELANNA.

The rotation of crops experiment at Yeelanna is a four-course series with 5-acre plots, in which two cereal crops are the only ones carted off the land, and is as follows:—Oats, rape, bare fallow, wheat. During its course this rotation has worked out as is shown below:—

Plot.	1919.	1920.	1921.	1922.
1	Oats	Rape	Fallow	Wheat
2	Rape	Fallow	Wheat	Oats
3	Fallow	Wheat	Oats	Rape
4	Wheat	Oats	Rape	Fallow

Wheat—2cwts. superphosphate per acre.

Oats—1cwt. superphosphate per acre.

Crops in Rotation Plots, 1919-1922.

Year.	Wheat with 2cwts. Superphosphate. B.	L.	Oats with 1cwt. Superphosphate. B.	L.
1919	20	1	22	6
1920	10	44	16	20
1921	14	24	18	23
1922	22	52	9	10
Means	17	0	16	25

EXPERIMENTS AT SMOKY BAY.

[Conducted by Mr. E. Lovelock].

At the request of the Smoky Bay Branch of the Agricultural Bureau a series of manurial experiments with wheat was arranged for that district, to be conducted in conjunction with the Department of Agriculture by Mr. E. Lovelock. The soils of this district consist mainly of calcareous sands, with the reputation of being so rich in phosphoric acid that phosphatic fertilisers are unnecessary for the production of maximum crops of the cereals.

An investigation of a sample of soil taken at the time of starting these plots showed on analysis:—

Total silica (SiO_2)	8.84 per cent.
Lime (CaO)	45.85 per cent.
Potash (K_2O)	0.019 per cent.
Phosphoric acid (P_2O_5)	0.085 per cent.
Organic carbon (C)	1.54 per cent.
Nitrogen (N)	0.094 per cent.
Manganese (Mn_3O_4)	0.010 per cent.
Chlorides (as sodium chloride)	0.016 per cent.

Since the above soil sample was submitted for analysis, a number of other samples were taken, and the most important mineral plant foods have been determined as follows:

Soil Samples from Smoky Bay, 1922.

Sample.	Description.	Depth.	Nitrogen (N)	Phosphoric Acid (P_2O_5)	Potash (K_2O)	Lime (CaO)
		In.	%	%	%	%
1.	Top of rise where soil is only about 5in. deep, and resting on limestone. Most crops grown here have been poor.	0–5	0.007	0.109	Nil	46.4
2.	Fair average soil of the district: has not been dressed with superphosphate for at least 10 years.	0–6	0.108	0.109	Trace	43.7
2B.		6–12	0.073	0.092	Trace	44.9
3.	From bare patch which grows poor crops: has appearance of being old rabbit warren.	0–6	0.078	0.092	Trace	45.0
3B.		6–12	0.048	0.107	Trace	45.8
4.	Fair average soil of district	0–6	0.113	0.106	Trace	42.8
5.	From fertile hollow between sandhills: similar hollows grow most crops really well.	0–6	0.277	0.146	0.115	40.3
5B.		6–12	0.210	0.180	0.150	40.4

These results show the average soil to be a calcareous sand, very deficient in potash, but, compared to average South Australian soils, comparatively rich in phosphoric acid and nitrogen, and so it was decided to arrange the trials with manurial dressings, as is set out below, conducting the experiments on the three-course rotation of (1) bare fallow, (2) wheat (manurial plots), (3) oats.

Manurial Experiments—Smoky Bay, 1922.

Plot.	Manuring per Acre.	Yield per Acre. B.	L.
1.	1cwt. superphosphate	19	19
2.	½cwt. superphosphate	18	55
3.	½cwt. muriate of potash	14	35
4.	1cwt. super and ½cwt. muriate of potash	18	39
5.	No manure	15	4
6.	2cwts. superphosphate	20	48
7.	2cwts. super and 1cwt. muriate of potash	20	33

OATS AT SMOKY BAY, 1922.

The oat crop is grown without fertiliser of any kind, so that there will be no residual effect of manure on the wheat plots when the land is next brought under the wheat crop; but the oat crop naturally receives benefits from any fertiliser which was not used by the preceding wheat crops, and as the yields secured from all the manurial plots were kept separate, they serve to show the residual effect of the manures for this year, and are as follows:—

Oaten Hay Crop—Smoky Bay, 1922.—*Oats Sown without Manure.*

Plot.	Fertiliser used per Acre on Preceding Wheat Crop in 1921.	Area. Acres.	Yield per Acre. T.	C.	L.
1.	No manure	1	1	0	71
2.	½cwt. superphosphate	2	1	0	31
3.	1cwt. superphosphate	1	1	3	22
3A.	1cwt. super and ½cwt. muriate of potash	1	1	4	25
4.	2cwts. superphosphate	2	1	5	51
5.	3cwts. superphosphate	2	1	6	109
	Means	9	1	3	81

EXPERIMENTS AT COONALPYN.

[Conducted by Mr. F. Tregenza.]

In 1919 a series of rotation of crops experiments was laid down for the Coonalpyn Branch of the Agricultural Bureau on Mr. Tregenza's farm. These have as their main objects—(1) the control of "take-all," which at present plays havoc in the wheat crops of the district, and (2) increasing the livestock-carrying capacity of the land. For the purpose a five-course rotation was adopted, consisting of five plots each

five acres in extent, to be worked on the system of bare fallow-wheat-oats-pasture-pasture. The wheat and the oat crops are being dressed with 1cwt. superphosphate per acre, and the grazing crop consists of a mixture of 10lbs. Wimmera rye grass, 2lbs. Subterranean clover, and 2lbs. rape per acre, sown without manure after the oat stubble has been lightly cultivated. The plots have now carried three crops of each of the cereals—wheat and oats—and have given the returns set out in the following table:—

Cereal Crops in Rotation Plots—Coonalpyn, 1920-1922.

Year.	Yield per Acre. Wheat. B.	L.	Oats. B.	L.
1920	*4	29	16	9
1921	21	5	23	26
1922	12	49	10	36
Means	13	28	16	37

* The wheat crop for 1920 is only a calculated yield; the crop was cut for hay, and produced 10cwts. 30lbs. per acre, and on the figures found to apply at Roseworthy Agricultural College that (1) the "total produce" of wheat crops equals about 82 per cent. of the "hay" weight, and (2) there are about 3½lbs. of "total produce" to every 1lb. of grain, the above yield was estimated.

Sown Pasture at Coonalpyn.

Each season, after the oat crop has been harvested, the stubble is grazed, the land is cultivated just sufficiently well to enable small seeds to be covered, and a mixture consisting of 10lbs. Wimmera rye grass, 2lbs. Subterranean clover, and 2lbs. rape is broadcasted to the acre without manure, and harrowed. This grazing crop is pastured for two consecutive seasons, then the land is bare-fallowed in preparation for a wheat crop. The results secured from these pasture plots are to be seen in the next table:—

Grazing of Sown Pasture—Coonalpyn, 1921-1922.

Year.	Sheep per Acre per Year. *First Year Grazing.	†Second Year Grazing.	Average Animal Grazing.
1921	1.33	0.79	1.06
1922	1.67	1.82	1.74
Means	1.50	1.30	1.40

* From harvest of oat crop to March 31st of next year.
† From April 1st to March 31st of next year.

Fodder Crops at Coonalpyn.

Besides the rotation of crops experiments dealt with above, Mr. Tregenza has also conducted a series of plots in which various fodder plants are compared one with the other. Each of these plots is about

one-eighth of an acre in area, and the fodders shown below were seeded early in 1920, and have only been grown for demonstration purposes.

Tall Fescue (Festuca elatior).—This grass did not germinate well, and the few plants present did not compete at all well with the ordinary weeds of the district. In April, 1923, the plot was reseeded with *Rib grass* (Plantago lanceolata).

Cocksfoot (Dactylis glomerator).—A good germination was received from this grass, and in 1920 it grew to at least 2ft. 6in. in height, was very fair in 1921, and made good growth in 1922.

Creeping Bent (Agrostis stolonifera).—Very few plants germinated, and, although they made fair growth, the plot was so irregular and patchy that it was reseeded to the same grass in April, 1923.

Wallaby Grass (Danthonia semi-annularis).—Fair to good growth was made by this grass in 1920, 1921, and the spring of 1922, but by the end of the season it had thinned out so considerably that the plot was resown to *Birdsfoot Trefoil* (Lotus corniculatus) in early April, 1923.

Perennial Canary Grass (Phalaris bulbosa).—Although a good germination was made by this grass, followed by very fair growth in the first year, it quickly became too thin a crop to be worth carrying on, so the plot was reseeded in early April, 1923, with *King Island Melilot* (Melilotus indica).

Yorkshire Fog (Holcus lanatus).—The seed germinated well, and the plants have made really good growth in each of the three seasons since seeding.

Paspalum Dilatatum.—This was established by planting rooted sections about 3ft. apart each way in the spring of 1920, and a good stand resulted, and the plants have made strong growth each season.

Prairie Grass (Bromus unioloides).—This grass did not last long, and by 1922 was so thin that it was replaced by *Sheep's Burnet* (Poterium sanguisorba) in April, 1923.

Perennial Rye Grass (Lolium perenne).—The rye grass has made good growth, right from germination onwards, to the exclusion of all weeds, and is still good.

Sweet Clover (Melilotus alba).—The germination of the seed was a little irregular, but the plants made very fair growth in both 1920 and 1921, and in 1922 made remarkably good growth. The plot was reseeded with this sweet clover in April, 1923.

Perennial Red Clover (Trifolium pratense perenne).—The germination of seed was not good enough to give a thick stand of plants, but those present have made fairly good growth each season. The plot was reseeded to this same clover in April, 1923.

Yellow Trefoil (Medicago lupulina).—Although this Medick made good growth for the first two seasons, it did not establish itself too well for the next year, and, being really thin, it was reseeded in April, 1923.

Alsike Clover (Trifolium hybridum).—The seed germinated well, and, although the plants made very fair growth, the weeds were getting the upper hand by the end of 1922, and so the plot was reseeded with the same clover in early April, 1923.

Lucerne (Medicago sativa).—The crop has made fair growth each year, but most plants have been rather short and spindly, with just an occasional vigorous plant.

EXPERIMENTS AT YURGO.

[Conducted by Mr. H. Sanders.]

The Nunkeri and Yurgo Branch of the Agricultural Bureau approached the Department of Agriculture in 1920 with a request that experimental plots be conducted in that district, on the farm of Mr. H. Sanders, of Yurgo. After an inspection of the district, and a conference with members of the Agricultural Bureau Branch, it was finally decided to conduct—(*a*) rotation-of-crops experiment, having as its main object the carrying of sheep, (*b*) wheat manurial plots, (*c*) small fodder plots for demonstration purposes.

The soils of the Yurgo district consist mainly of two types, the ridges being composed of sandy soils of light texture and light color, with the hollows containing good red-colored loam, and the rotation-of-crops experimental block was selected to contain about one-fifth of the sandy high land and about four-fifths of red loam. Samples taken from these two types of soil were analysed by the Department of Chemistry, with the following results:—

Soil Samples from Yurgo.

	Red Soil of Hollows.		Sandy Soil of Hills.	
	0–6in.	6–12in.	0–6in.	6–12in.
	%	%	%	%
Phosphoric acid (P_2O_5)	0.030	0.014	0.032	0.004
Potash (K_2O)	0.118	0.666	0.002	0.013
Nitrogen (N)	0.034	0.040	0.017	0.020
Organic carbon	0.84	0.56	0.48	0.40
Lime (CaO)	0.196	4.020	0.154	0.050
Chlorides	0.005	0.047	0.001	0.006
Manganese (Mn_3O_4)	0.004	0.013	0.004	0.002
Total silica	84.1	57.0	97.0	96.0
Soil reaction	Alkaline	Alkaline	Very faintly alkaline	Neutral

Yurgo Rotation-of-Crop Experiment.

As the farmers, of which the Nunkeri and Yurgo Branch of the Agricultural Bureau is composed, desired a rotation of crops which would reduce the amount of cropping and increase the livestock carrying capacity of the land, a five-course rotation on six-acre plots was arranged as follows:—

Year.	Block A.	Block B.	Block C.	Block D.	Block E.
1922	Wheat (plots)	Fallow	Wheat	Lucerne	Lucerne
1923	Lucerne	Wheat (plots)	Fallow	Lucerne	Lucerne
1924	Lucerne	Lucerne	Wheat (plots)	Fallow	Lucerne
1925	Lucerne	Lucerne	Lucerne	Wheat (plots)	Fallow
1926	Fallow	Lucerne	Lucerne	Lucerne	Wheat (plots)
1927	Wheat (plots)	Fallow	Lucerne	Lucerne	Lucerne

Wheat—60lbs. seed per acre; manurial plots.
Lucerne—6lbs. seed per acre; no manure.

Yurgo Manurial Plots with Wheat.

As manurial experiments were also wanted by local farmers, it was decided that the plot carrying wheat would, each season, be divided up into six smaller plots, and receive different manurial dressings. The plots arranged, and the yields secured from each for this, the first year, are set out below:—

Manurial Plots with Wheat—Yurgo, 1922.

Plot.	Manuring per Acre.	Yield per Acre. B.	L.
1.	No manure	9	9
2.	1cwt. superphosphate	26	24
3.	½cwt. super and 5cwts. lime	20	10
4.	1cwt. super and 5cwts. lime	25	19
5.	2cwts. super and 5cwts. lime	24	7
6.	3cwts. super and 5cwts. lime	24	20

Grazing of Rotation Plots—Yurgo, 1922.

This being the first year of these rotation-of-crops experiments at Yurgo, both Block D and Block E were seeded to lucerne at the rate of 6lbs. of seed per acre, and they were grazed together as one block, the livestock carried being equivalent to 1.26 sheep per acre per year for each block, for the "First Year Grazing," which is taken to March 31st, 1923.

Fodder Crops at Yurgo.

Small blocks of very sandy land, between quarter acre and half acre in extent, have been seeded with various fodder plants, as demonstration plots, and the crops tried behaved somewhat as follows in 1922:—

Lucerne (2lbs. seed per acre).—Very thin and uneven, and the plot has not supplied much grazing.

Lucerne (*4lbs. seed per acre*).—Fairly good stand, but the plants are not vigorous.

Lucerne (*6lbs. seed per acre*).—Good, thick stand, but, like the previous plots, the lucerne plants have not made vigorous growth on this sand.

Subterranean Clover (Trifolium subterraneum).—This clover has made healthy, strong growth of a rich green color, and is very promising as a fodder crop for these particular conditions.

King Island Melilot (Melilotus indica).—Although the germination of the seed was good, the plants did not make strong growth.

Buffalo Grass (Stenotaphrum americanum).—Did not produce a good stand owing to dryness of rooted sections.

Rhodes Grass (Chloris gayana).—Hardly a plant resulted from the rooted sections transplanted.

Wimmera Rye Grass (Lolium subulatum).—This grass germinated well, and produced a strong, heavy mass of growth, to the exclusion of all weeds.

Wallaby Grass (Danthonia semi-annularis).—This grass did not make very strong growth, but withstood the summer weather.

Besides the above fodder-crop plots, small lots of Woolly Top (*Pennisetum villosum*) Kikuyu grass (*Pennisetum longistylum*), and many-flowered millet grass (*Oryzopsis miliaceum*) were tried, all of which took root, and have made some growth.

EXPERIMENTS AT WINDSOR.

[Conducted by Mr. S. D. White.]

At the request of the Windsor Branch of the Agricultural Bureau, experimental plots testing wheat varieties on fallowed land were inaugurated on the farm of Mr. S. D. White, of Windsor. All varieties were drilled in with 2cwts. superphosphate per acre in the same field, and gave the following returns per acre:—

Wheat Variety Yields—Windsor, 1922.

Variety.	Area. Acres.	Yield per Acre. B.	L.
Felix	3.03	27	32
Ford	3.03	25	57
Sultan	3.03	20	47
King's Red	3.03	19	57
Gluyas	3.03	19	32
Florence	3.03	17	27

ORCHARD NOTES FOR SOUTHERN DISTRICTS FOR SEPTEMBER, 1923.

[By C. H. BEAUMONT, Instructor and Inspector.]

Ploughing should be completed as early as possible and the trees should be cleaned around, especial care being taken not to allow the soil to become heaped up close to the butts.

Do not allow any cuttings to remain about the orchard.

If you intend to use fertilisers, do it now. Drill in 2cwts. to 3cwts. of bonedust or complete orchard manure.

Plant citrus trees; the method is the same as that described for other trees. Be sure that the trees are free from disease and weeds.

Spraying begins in earnest this month, and all trees liable to fungus pests must be carefully sprayed with Bordeaux or Burgundy mixture.

Use red oil emulsion for lessening red spider. This mixture will also assist in checking woolly aphis. Peach aphis is best treated with Black Leaf 40 or a decoction of tobacco with a little resin wash in it.

Watch the strawberry plants for mildew. If the disease is found, treat it with lime sulphur solution or with flowers of sulphur. Spray with arsenate of lead for cut worms.

When planting tomatoes, use only strong, well grown plants.

Fruit trees and vines should be grafted.

Go carefully through the fruit in cool store, only the best and firmest should be retained.

THE AGRICULTURAL VALUE OF FERTILISERS.

A number of questions, bearing on the value of different forms of fertilisers, submitted by a farmer at Myponga, were replied to recently by the Superintendent of Experimental Work (Mr. W. J. Spafford) in the following terms:—

1. *Is the acid-soluble phosphate in rock phosphate of the same value as the acid-soluble phosphate in bonedust?*

Although the acid-soluble phosphate in both rock phosphate and bonedust is the same chemical substance (tri-calcic phosphate) it has slightly different agricultural value in these two forms. At the

present price of £3 10s. a ton for rock phosphate containing 57 per cent. tri-calcic phosphate, the unit value (each per cent. per ton) is just under 1s. 3d.—arrived at by dividing £3 10s. by the 57 per cent.—and when tri-calcic phosphate in rock phosphate is worth 1s. 3d. per unit, the same substance in bonedust or any other organic manure is worth from an agricultural point of view about 1s. 9d. per unit. In other words, 10lbs. of the acid-soluble phosphate in bonedust is about equal to 14lbs. in raw rock phosphate. In very "sour" soils this ratio is reduced and the two forms become nearer of one value.

2. *By the addition of a nitrogenous manure to rock phosphate could I make a fertiliser of equal value to bonedust containing* 40 *per cent. acid-soluble phosphate and* 3.25 *per cent. nitrogen?*

If 40lbs. of tri-calcic phosphate in bonedust equals 56lbs. in rock phosphate, a mixture of 98lbs. of raw rock phosphate containing 57 per cent. acid-soluble phosphate and 16.25lbs. of sulphate of ammonia containing 20 per cent. nitrogen would be approximately of equal agricultural value to 100lbs. of bonedust containing 40 per cent. tri-calcic phosphate and 3.25 per cent. nitrogen. To make a fertiliser of the above mixture equal both in agricultural value and weight, with the bonedust mentioned, you would need 83.75lbs. raw rock sulphate containing almost 67 per cent. acid-soluble phosphate and 16.25lbs. sulphate of ammonia containing 20 per cent. nitrogen.

3. *Does rock phosphate contain plant food in the same way as bonedust, or is it only a soil sweetener?*

All of the phosphoric acid contained in the rock phosphate is plant food, and if applied to the soil will eventually be collected by plants in the same way as will that substance in the bonedust, and the only difference in the two forms rests on the fact that soil bacteria act more readily on the organic form than on the inorganic, so liberating the phosphoric acid sooner. It is because of this fact that acid-soluble phosphates in organic manures have a higher agricultural value than in rock phosphate.

4. *Are manures containing acid-soluble phosphate as well as water-soluble phosphate more suitable for this district with a* 29*in. average annual rainfall?*

5. *Would it be advisable to try rock phosphate in this district?*

At the present prices of the various phosphatic fertilisers on our market you will get best money returns from annual crops by using superphosphate. If you wish to manure pasture lands, then you would think of using acid-soluble phosphate as well as the water-soluble form.

6. *When should acid-soluble phosphate be applied, in the autumn or in the spring?*

You would only use acid-soluble phosphate for perennial crops and pastures, and then best results would be secured by applying it in the autumn.

EXPERIMENTAL FARM HARVEST REPORTS.

VEITCH'S WELL EXPERIMENTAL FARM.

[By L. SMITH, Manager.]

This farm is situated in the hundred of Allen, 158 miles from Adelaide, on the Loxton Railway. It consists of about 3,800 acres of land, the bulk of which is sandy, the remainder running to shallow light-loam soils overlying hard limestone rock—conditions similar to thousands of acres of surrounding country.

THE SEASON 1922.

The returns from the cereal crops, as set out below, show that the season was an average one. The total rainfall was 10.28in., of this 8.69in. could be regarded as rain useful to the growing crop. The bulk of the seed was put in dry during April and May, and germinated well after the first rains. All cereals were promising more than average returns up till the end of September, but a dry October considerably reduced the yields. The distribution of the rainfall for the year, together with that for each year since 1917, is set out in the table below:—

Rainfall Distribution—Veitch's Well, 1909-1922.

	Means, 1909-1916.	1917.	1918.	1919.	1920.	1921.	1922.	Means, 1909-1922.
	In.	In.	In.	In.	In.	In.	In.	In.
January	0.34	0.45	0.07	0.20	0.10	1.61	0.48	0.40
February	0.89	2.60	0.23	5.49	—	0.97	0.09	1.18
March	1.44	0.78	0.49	0.36	0.33	1.24	—	1.05
April	0.28	0.24	1.00	0.26	0.33	0.06	0.89	0.36
May	1.34	1.15	1.31	1.88	1.45	2.19	3.06	1.55
June	1.71	1.01	1.08	0.37	1.29	0.78	1.21	1.39
July	1.16	1.14	1.36	0.29	0.79	0.91	0.91	1.05
August	1.38	1.91	2.36	0.53	2.19	1.28	0.70	1.43
September	1.94	2.01	0.22	0.76	3.10	1.54	1.10	1.73
October	0.79	2.38	0.98	0.45	3.66	0.45	0.73	1.07
November	1.07	1.72	0.07	0.62	0.95	1.03	0.09	0.93
December	0.73	1.21	—	2.03	1.31	0.30	1.02	0.84
Total	13.07	16.60	9.20	13.24	15.50	12.36	10.28	12.98
"Useful" rain (April-November)	9.67	11.56	8.41	5.16	13.76	8.24	8.69	9.51

The distribution of the "useful" rainfall is set out in the next table. The amount gauged is shown to be a little below the average, although fair seeding and winter rains fell.

	1922.	Means, 1909-1922.
	In.	In.
Seeding rains (April-May)	3.95	1.91
Winter rains (June-July)	2.12	2.44
Spring rains (August-October)	2.53	4.23
Early summer rains (November)	0.09	0.93
Total "Useful" rainfall	8.69	9.51

Crops.

In the fields, cereals were the only crops grown. In small blocks near the homestead, lucerne and Wimmera rye grass gave good feed.

Hay Crops.—A block containing 20.46 acres of Baroota Wonder wheat in Field No. 11, and also 8.98 acres of Algerian oats in Field No. 11, were the only areas sown solely for hay. From these, and 13.5 acres of headlands—a total hay area of 42.94 acres—60 tons of hay were cut, an average yield of 1 ton 7cwts. 106lbs. per acre.

The following table sets out hay crops harvested at Veitch since 1910:—

Hay Returns—Veitch's Well, 1910-1922.

Year.	Rainfall. Total	Rainfall. "Useful"	Area.	Total Yield.			Yield per Acre.		
	In.	In.	Acres.	T.	C.	L.	T.	C.	L.
1910	16.91	10.15	82.00	82	0	0	1	0	0
1911	13.36	7.28	121.50	74	18	0	0	12	37
1912	12.16	10.87	218.00	109	0	0	0	10	0
1913	14.95	8.27	140.00	70	0	0	0	10	0
1914	6.24	3.66	100.00	Total failure.					
1915	9.83	8.79	158.00	180	0	0	1	2	88
1916	16.69	15.29	127.08	243	0	0	1	18	27
1917	16.60	11.56	69.01	110	0	0	1	11	98
1918	9.20	8.41	78.89	93	16	0	1	3	87
1919	13.24	5.16	109.88	45	0	0	0	8	21
1920	15.50	13.76	122.21	220	0	0	1	16	0
1921	12.36	8.24	65.59	90	0	0	1	7	49
1922	10.28	8.69	42.94	60	0	0	1	7	106
Means	12.87	9.24	—	—			1	0	74

The season's yield is above the average, and its inclusion in the mean for the farm brings that figure up to 1 ton 0cwt. 74lbs. per acre for the 13-year period 1910-1922.

Oat Crops.—All told, 84.89 acres of oats were harvested for grain. These were sown in Fields No. 11 and No. 5, being drilled in on fallow between April 3rd and 15th at the rate of 40lbs. of seed to the acre, with 1cwt. of superphosphate. Field No. 11 was fallowed August 8th to 30th, cultivated September 12th to 30th, cultivated March 17th to 21st; and finally harrowed after seeding. Field No. 5 was fallowed

July 11th to August 6th, cultivated September 12th to October 5th, cultivated March 21st to 27th; and finally harrowed after seeding. The results secured are set out below:—

Oat Variety Yields—Veitch's Well, 1922.

Variety.	Area. Acres.	Total Yield. Bush. lbs.	Yield per Acre. Bush. lbs.
Smyrna	3.09	87 6	28 8
Rua Kura	3.09	68 28	22 9
Kelsall's	3.07	58 21	19 2
Kherson	3.32	61 21	18 21
Lachlan	1.09	19 19	17 35
Early Burt	3.09	40 15	13 3
Scotch Grey	31.33	377 0	12 1
Algerian	36.81	163 30	4 18
Farm average	84.89	876 20	10 13

Of the oat varieties tried on this farm Algerian has been considered the most reliable yielder for hay and grain. Early Burt has only been tried for one year, and was unfortunate in striking a very heavy storm when within a day of being ripe. It is a most promising variety for both hay and grain. Smyrna is also a variety that may do well for grain.

The inclusion of this season's return in the mean oat yield of the farm reduces it from 18bush. 33lbs. for six years to 17bush. 25lbs. for seven years, 1916-1922.

The yields for the past seven years are set out in the following table:—

Oat Returns—Veitch's Well, 1916-1922.

Year.	Total Rainfall. In.	"Useful" Rainfall. In.	Area. Acres.	Total Yield. Bush. lbs.	Yield per Acre. Bush. lbs.
1916	16.69	15.29	12.39	478 37	38 26
1917	16.60	11.56	50.19	1,396 35	27 33
1918	9.20	8.41	40.43	253 24	6 11
1919	13.24	5.16	39.17	379 12	9 27
1920	15.50	13.76	157.08	2,110 37	13 18
1921	12.36	8.24	36.30	623 30	17 7
1922	10.28	8.69	84.89	876 20	10 13
Means	13.41	10.16	—	—	17 25

Barley Crops.—The barley crops harvested for grain were grown part on new ground and part on fallow. The fallowed area was 54.69 acres and new ground 17.55 acres. The new ground was skim ploughed and drilled May 9th to 13th with quantative seed plots, and had a dressing of 1cwt. of superphosphate.

Shell Lubricating Oils For the Farm.

SHELL

Special Harvester Oil,
Reaper & Binder Oil,
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Plough Oils,
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The fallowed area under barley was 28.14 acres of Experimental Block C, and an area of 26.55 acres in Field No. 3D. This field, 3D, was fallowed very late, October 6th to 12th, seeded at the end of May with 1bush. of seed and 1cwt. super., and harrowed after being drilled.

The yield obtained, together with the farm average for the year, is detailed in the following table:—

Barley Variety Yields—Veitch's Well, 1922.

Variety.	Area.	Total Yield.	Acre Yield.
	Acres.	Bush. lbs.	Bush. lbs.
Tunis 1	26.55	261 0	9 42
Tunis 4 (seed plots)	17.55	147 0	8 19
Tunis 4 (exp. plots)	28.14	539 38	19 9
	72.24	947 38	13 6

The dry nature of the ripening period showed ill effects on the sample and yield. Well-worked fallow yielded 19bush. 9lbs.

The next table gives details of the barley crops grown on this farm since 1915:—

Barley Returns—Veitch's Well, 1915-1922.

Year.	Total Rainfall.	"Useful" Rainfall.	Area.	Total Yield.	Yield per Acre.
	In.	In.	Acres.	Bush. lbs.	Bush. lbs.
1915	9.83	8.79	22.72	248 9	10 46
1916	16.69	15.29	20.10	517 20	25 37
1917	16.60	14.56	44.03	1,104 10	25 4
1918	9.20	8.41	49.68	305 5	6 7
1919	13.24	5.16	83.18	185 46	2 12
1920	15.50	13.76	73.20	2,232 48	30 25
1921	12.36	8.24	69.81	1,077 28	15 24
1922	10.28	8.69	72.24	947 38	13 6
Means	12.96	9.99	—	—	16 7

The mean yield of 16bush. 7lbs. is not a high one for barley, but it is the best yielding cereal we have for bulk feed for pigs.

Wheat Crops.—Other than in experimental plots, all wheat crops were grown in Fields Nos. 5, 10, 11, and 3D. The fallow land in Nos. 5 and 11 was turned up in July and August, was cultivated in September and March, and seeded early in May with 60lbs. of seed and 1cwt. of superphosphate per acre. Field No. 3D was fallowed early in October, and seeded at the end of May. Field No. 10 was new ground. It was skim ploughed before being drilled, and was seeded with 60lbs. of seed and 70lbs. of superphosphate per acre on May 7th to 13th.

The yields obtained from all varieties grown are detailed in the next table:—

Wheat Variety Yields—Veitch's Well, 1922.

Variety.	Field Grown. No.	Area. Acres.	Total Yield. Bush.	lbs.	Yield per Acre. Bush.	lbs.
President	5	1.11	18	11	16	23
Walker's Wonder	5	2.75	41	26	15	4
Sultan	5	2.78	40	48	14	41
Canaan	5	2.22	31	43	14	17
Queen Fan	11	14.77	208	0	14	5
Triumph	5	39.88	558	16	14	0
Rajah	5	3.25	42	7	12	58
Late Gluyas	5	42.39	548	16	12	57
Sultan (selection 4)	5	3.22	40	39	12	37
Emperor	5	1.07	12	43	11	53
Fortune	5	3.25	34	26	10	36
Cumberland	5	29.33	301	20	10	16
Federation	5	7.42	75	41	10	12
Felix	5	3.25	33	7	10	11
Red Russian	11	27.59	253	0	9	10
Baroota Wonder	5	40.33	383	23	9	30
Maharajah	5	3.25	29	30	9	5
King's Red	11	7.99	63	58	8	0
Unknown (ex Minnipa)	5	2.43	19	16	7	56
Caliph	30	44.75	342	20	7	39
Baroota Wonder (Sel. 1)	5	3.22	24	49	7	42
Mixture	10	10.77	58	58	5	29
Early Gluyas	10	72.28	330	36	4	34
Yandilla King	11	26.14	291	12	11	8
Baroota Wonder	Exp.	4.26	74	11	17	25
Baroota Wonder	Exp.	28.14	361	8	12	50
Farm average	—	427.84	4,219	34	9	52

The yields recorded are slightly below the average. The varieties sown on "new ground" considerably reduced the yield. The varieties showing to advantage are President, Walker's Wonder, Sultan, Canaan, Queen Fan, and Triumph. Including this year's yield, the farm average now stands at 10bush. 53lbs.

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The next table gives details of the wheat crops grown on the farm since 1909:—

Wheat Returns—Veitch's Well, 1909-1922.

Year.	Total Rainfall. In.	"Useful" Rainfall. In.	Area. Acres.	Total Yield. Bush. lbs.	Yield per Acre. Bush. lbs.
1909	14.41	13.04	22.00	396 0	18 0
1910	16.91	10.15	197.50	2,156 0	10 55
1911	13.36	7.28	620.90	5,080 30	8 11
1912	12.16	10.87	569.00	5,544 18	9 45
1913	14.95	8.27	791.40	4,742 28	6 0
1914	6.24	3.66	951.00	325 30	0 21
1915	9.83	8.79	602.11	6,681 51	11 6
1916	16.69	15.29	407.74	7,102 20	17 25
1917	16.60	11.56	469.91	7,156 50	15 14
1918	9.20	8.41	287.89	1,905 28	6 37
1919	13.24	5.16	263.62	1,419 32	5 23
1920	15.50	13.76	287.52	6,384 55	22 12
1921	12.36	8.24	553.61	6,256 18	11 18
1922	10.28	8.69	427.84	4,219 34	9 52
Means	12.98	9.51	—	—	10 53

Although the average yield of 10bush. 53lbs. per acre is not very high, it is quite satisfactory for these particular conditions. With well-worked fallow land, clear of stumps, much better returns can be expected.

The behaviour of the majority of varieties of wheats grown on this farm since 1918 is shown in the table below:—

Yields of Varieties of Wheat—Veitch's Well, 1918-1922.

Variety.	1918. B. L.	1919. B. L.	1920. B. L.	1921. B. L.	1922. B. L.	Means, 1918-22. B. L.
Red Russian	14 45	7 36	27 8	7 14	9 10	13 11
Yandilla King	10 35	3 18	25 10	11 37	11 8	12 22
Queen Fan	2 54	4 36	26 18	13 14	14 5	12 13
Baroota Wonder	5 30	6 7	26 13	11 23	11 6	12 4
Fortune	9 18	9 6	16 56	9 49	10 36	11 9
Gluyas Early	9 53	6 44	19 19	14 56	4 34	11 5
Cumberland	8 29	5 10	18 47	10 11	10 16	10 35
Federation	4 9	4 38	23 2	10 12	10 12	10 27
Late Gluyas	3 40	2 13	19 43	11 43	12 57	10 3
King's Early	5 9	4 34	17 25	7 59	8 0	8 37
Caliph	—	7 50	25 28	11 53	7 39	—
Triumph	—	—	14 22	13 25	14 0	—
President	—	—	—	—	16 23	—
Walker's Wonder	—	—	—	—	15 4	—
Sultan	—	—	—	—	14 41	—
Canaan	—	—	—	—	14 16	—
Rajah	—	—	—	—	12 58	—
Emperor	—	—	—	—	11 53	—
Felix	—	—	—	—	10 11	—
Maharajah	—	—	—	—	9 5	—
Farm average	6 37	5 23	22 12	11 18	9 52	11 4
	In.	In.	In.	In.	In.	In.
Total rainfall	9.20	13.24	15.50	12.36	10.28	12.12
"Useful" rainfall	8.41	5.16	13.76	8.24	8.69	8.85

Experimental Plots.

A series of permanent experimental plots, on which the various treatments to be given are to be continued for a number of years on the same blocks of land, has been mapped out. The series consists of manurial and cultivation tests of both wheat and barley.

Manurial Plots with Wheat.

The permanent manurial plots with wheat—being worked on the following rotation:—(1) Pasture, (2) bare fallow, (3) wheat—carried their third crops this season, with the following results:—

Permanent Manurial Plots with Wheat—Veitch's Well, 1920-1922.

Plot.	Manuring per Acre.	Yield per Acre. 1920. Bush. lbs.	1921. Bush. lbs.	1922. Bush. lbs.	Means, 1920-22. Bush. lbs.
1	½cwt. superphosphate	28 43	15 47	12 15	18 55
2	1cwt. superphosphate	28 19	17 53	13 6	19 46
3	2cwts. superphosphate	32 29	19 9	12 49	21 29
4	3cwts. superphosphate	31 37	19 18	12 4	21 0
5	No manure	24 59	14 33	13 13	17 35
6	1cwt. superphosphate, ½cwt. sulphate of potash	28 18	19 47	13 14	20 26
7	1cwt. superphosphate, ½cwt. nitrate of soda	26 59	17 47	12 50	19 12
8	1cwt. superphosphate, ½cwt. sulphate of potash, ½cwt. nitrate of soda	29 53	18 30	12 11	20 11
9	No manure	21 18	15 49	13 26	16 51

Cultivation Tests with Wheat.

A series of experimental plots, worked on the following rotation:—(1) Pasture, (2) bare fallow, (3) wheat, and having as its object the testing of the different methods of cultivating bare fallow for the growing of wheat, was commenced in 1920. The results secured from these plots are set out below:—

Cultivation Plots with Wheat—Veitch's Well, 1920-1922.

Plot.	Treatment.	Yield per Acre. 1920. Bush. lbs.	1921. Bush. lbs.	1922. Bush. lbs.	Means, 1920-1922. Bush. lbs.
	Early Fallow (June-July).				
10	Ploughed 4in. deep and harrowed within a few days. (Cultivated whenever weeds or a crust rendered necessary)	27 5	17 28	12 57	19 10
11	Ploughed 4in. deep and left rough throughout the winter. (Cultivated whenever weeds or a crust rendered necessary)	28 19	17 8	13 31	19 39

Cultivation Plots with Wheat—Veitch's Well, 1920-1922—continued.

Plot.	Treatment.	Yield per Acre. 1920. Bush. lbs.	1921. Bush. lbs.	1922. Bush. lbs.	Means. 1920-1922. Bush. lbs.
	Early Fallow (June-July).				
12	Ploughed 4in. deep, rolled within a few days, and cultivated or harrowed according to circumstances. (Cultivated or harrowed whenever weeds or a crust rendered necessary)	27 33	13 45	12 44	18 1
	Late Fallow (September).				
13	Ploughed 2in. deep, and cultivated whenever weeds or a crust rendered necessary, but not rolled	24 19	14 17	12 51	17 9
14	Ploughed 4in. deep, heavily rolled the same day as ploughed, and immediately harrowed. (Cultivated whenever weeds or a crust rendered necessary)	26 33	13 16	12 28	17 26

Manurial Plots with Six-rowed Barley.

On the idea that light-textured soils in low-rainfall conditions should be utilised to produce barley crops rather than wheat crops, as is the case in other low-rainfall countries, a series of manurial plots with six-rowed barley on the (1) Pasture, (2) bare fallow, (3) barley rotation has been arranged, and in these plots the same system of manuring as that adopted for the wheat manurial plots is being practised.

Manurial Plots with Six-rowed Barley—Veitch's Well, 1920-1922.

Plot.	Manuring per Acre.	Yield per Acre. 1920. Bush. lbs.	1921 Bush. lbs.	1922. Bush. lbs.	Means, 1920-1922. Bush. lbs.
28	½cwt. superphosphate	34 22	25 27	20 48	26 49
27	1cwt. superphosphate	28 15	28 49	22 22	26 29
26	2cwts. superphosphate	29 47	21 33	20 13	23 48
25	3cwts. superphosphate	25 6	23 42	17 21	22 6
24	No manure	27 36	14 40	19 10	20 29
23	1cwt. superphosphate, ½cwt. sulphate of potash	26 3	21 46	20 9	22 36
22	1cwt. superphosphate, ½cwt. nitrate of soda	32 22	19 15	20 25	24 4
21	1cwt. superphosphate, ½cwt. sulphate of potash, ½cwt. nitrate of soda	25 6	19 15	20 1	21 24
20	No manure	24 10	15 39	16 39	18 46

Cultivation Tests with Six-rowed Barley.

As in the case with the manurial plots, the cultivation tests on the (1) Pasture, (2) bare fallow, (3) wheat rotation, were duplicated as to treatment with six-rowed barley as the crop, instead of the wheat.

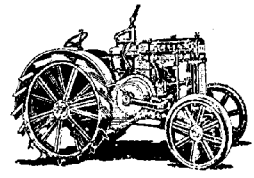
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Cultivation Plots with Six-rowed Barley—Veitch's Well, 1920-1922.

Plot.	Treatment.	Yield per Acre. 1920. Bush. lbs.	1921. Bush. lbs.	1922. Bush. lbs.	Means, 1920-1922. Bush. lbs.
	Early Fallow (June-July).				
19	Ploughed 4in. deep and harrowed within a few days. (Cultivated whenever weeds or a crust rendered necessary)	29 10	19 34	18 39	22 28
18	Ploughed 4in. deep and left rough through the winter. (Cultivated whenever weeds or a crust rendered necessary) ..	26 7	18 12	16 45	20 21
17	Ploughed 4in. deep, rolled within a few days, and cultivated or harrowed according to circumstances. (Cultivated whenever weeds or a crust rendered necessary) (late fallow, September)	30 41	23 29	17 0	23 40
16	Ploughed 2in. deep and cultivated whenever weeds or a crust rendered necessary, but not rolled	34 8	20 17	19 7	24 27
15	Ploughed 4in. deep, heavily rolled the same day as ploughed, and immediately harrowed. (Cultivated whenever weeds or a crust rendered necessary)	30 3	20 19	18 45	23 6

Rate of Seeding Tests with Wheat.

A block of land in a fallowed field has been selected during each of the past eight years, and has been divided into plots, all of which have received a dressing of 1cwt. superphosphate per acre, but each one had a different quantity of seed wheat sown on it. The same variety of wheat was used on all plots in each individual year, and other than the amount of seed used on the plots, their treatment was identical. The results obtained over this period, 1915 to 1922, are set out below:—

Quantitative Seed Tests—Veitch's Well, 1915-1922.
(*Tests on Wheat Sown with 1cwt. Superphosphate per Acre.*)

Year.	30lbs. Wheat. B. L.	45lbs. Wheat. B. L.	60lbs. Wheat. B. L.	80lbs. Wheat. B. L.	Total "Useful" Rainfall. In.	Rainfall. In.
1915	9 47	10 9	10 45	9 57	9.83	8.79
1916	18 9	19 1	19 5	18 39	16.69	15.29
1917	22 53	23 42	23 56	26 31	16.60	11.56
1918	7 20	8 39	8 53	8 41	9.20	8.41
1919	7 21	7 20	7 51	8 34	13.24	5.16
1920	24 56	25 49	25 12	27 29	15.50	13.76
1921	17 13	19 31	19 16	18 31	12.36	8.24
1922.	17 22	17 26	17 21	17 37	10.28	8.69
Means ..	15 38	16 27	16 32	17 0	12.96	9.99

Although the differences between the results in the mean yields are not very marked, they are sufficient to show that in this district:—

(1) 30lbs. of seed is not sufficient for the best results.

(2) The yields increase as the amount of seed wheat used is increased to 80lbs. of seed per acre.

(3) The greatest net increase of crop, over and above the crop produced from 30lbs. of seed wheat per acre, is secured by using 80lbs. of seed per acre, and this is also worth a considerable amount where a good stubble burn is required.

Rate of Seeding Tests with Barley.

This season a block of "new" land, about 18 acres in extent, was divided into six plots, the whole of which was at seeding dressed with 1cwt. superphosphate per acre, but each plot received a different amount of seed barley (Tunis 1) to the acre. The yields obtained are set out below:—

Quantitative Seed Tests—Veitch's Well, 1922.

(*Tests on Barley Sown with 1cwt. Superphosphate per Acre.*)

Year.	20lbs. Barley. Bush. lbs.	30lbs. Barley. Bush. lbs.	40lbs. Barley. Bush. lbs.	50lbs. Barley. Bush. lbs.	60lbs. Barley. Bush. lbs.	70lbs. Barley. Bush. lbs.
1922	4 33	5 5	6 28	8 23	8 18	6 21

Fertiliser Tests with Wheat.

As it will be some years before the results to be secured from the permanent manurial plots can be used as a basis of comparison, and as tests with various dressings of superphosphate on wheat crops have been conducted on fallow land, it will be instructive to tabulate the yields obtained over the past seven years. These are as follows:—

Quantitative Fertiliser Tests—Veitch's Well, 1915-1922.

Year.	No Manure. B.	No Manure. L.	½cwt. Super. B.	½cwt. Super. L.	1cwt. Super. B.	1cwt. Super. L.	2cwts. Super. B.	2cwts. Super. L.	3cwts. Super. B.	3cwts. Super. L.
1915	11	52	13	15	13	43	13	40	13	19
1916	13	39	17	7	18	49	18	32	21	31
1917	20	47	23	48	25	30	21	17	25	15
1918	5	17	6	20	7	28	8	22	9	9
1919	9	15	9	28	9	43	10	37	8	58
1920	23	8	28	43	28	19	32	29	31	37
1921	15	11	15	47	17	53	19	9	19	18
1922	13	20	12	15	13	6	12	49	12	4
Means	14	4	15	50	16	49	17	7	17	39

CLEFT GRAFTING.

"The best time to graft grape vines by the ordinary cleft method is when the stocks have shot out into foliage, say, when the shoots have reached 4in. to 6in. in length. If done before this, bursting of the buds takes place, the crude sap floods the sections and prevents the union of the tissues of stock and scion. It will be necessary to secure the scions at once, if not already procured. These should be buried in a cool, moist, shaded position to keep the sap inactive and the buds dormant until the stock vines in the open have leafed out as described."

'After having tendered this advice to a vinegrower on one of the River Murray Settlements, the Horticultural Instructor (Mr. Geo. Quinn) recently described the procedure of cleft grafting as follows:—

When the first leaves have emerged on the stock plants, saw the trunks off at about the ground line or an inch below that. Split the stock carefully with a large knife—an old sheep shearing blade makes a good grafting tool—and if the grain does not split smoothly and straight start the cleft by sawing about an inch or inch and a half down. When the cleft is made, clean the edges of the bark and sapwood with a knife if they are frayed out. Then insert a wedge in the centre to hold open the cleft. If the stock is a couple of inches or more in diameter insert a scion on each side. Cut the scions wedge shaped and tapering on the inner edges, so as not to hold the split open towards the centre of the stock any more than necessary. Make the chisel or wedge end on an internode and about 3in. long, allowing one bud to remain at the top of the wedge section facing outwards, and another on the top extremity of the scion—two buds in all on each scion. Fit the wedge shaped ends into the cleft on each side, seeing that the inner barks of scion and stock meet as much as possible, then carefully withdraw the distending tool from the cleft of the stock, which should come together and clasp the scions firmly into position. A piece of binder twine is bound around the split stock as a safeguard and finally the whole lot, scions included, is covered up by a mound of fine soil, say, to a depth of a couple of inches or more. It is a good plan before mounding up to insert a stake alongside the stock as a protection or indicator of its position. When growth begins it is often suckers from stocks which push through the mound first. When the first shoots show freely the mound should be explored promptly, but with reasonable care, and should the shoots prove to be suckers they must be suppressed and the mound replaced. The buds on the scion often lag, but start some weeks later; whilst they hold life there is always hope of growth ensuing. If both scions grow, one may be removed at the next winter's pruning, the best one being carried straight on to the trellis and formed as if it were a young vine. The other may be allowed to grow through the first summer anyhow, and is retained for physiological reasons bound up in the well-being of the root system.

THE AGRICULTURAL BUREAU OF SOUTH AUSTRALIA.

CONFERENCE OF SOUTHERN BRANCHES.

The annual conference of Southern Branches of the Agricultural Bureau was held at Strathalbyn on Tuesday, August 14th. The Department of Agriculture was represented by Capt. S. A. White, C.M.B.O.U. (Vice-Chairman of the Advisory Board of Agriculture), the Superintendent of Experimental Work (Mr. W. J. Spafford), the Government Dairy Expert (Mr. P. H. Suter), the Government Poultry Expert (Mr. D. F. Laurie), the Secretary of the Advisory Board of Agriculture (Mr. H. J. Finnis), and the Field Officer (Mr. S. B. Opie). There was an excellent attendance of delegates from the following Branches:—Strathalbyn, Port Elliot, Rapid Bay, Milang, Rockwood, Blackheath, Ashbourne, Currency Creek, and Hartley. The chairman of the local Branch of the Bureau (Mr. J. Saunders), in the course of a short address, extended a cordial welcome to the officers of the Department and visiting delegates, and called on Capt. White to open the conference. The chairman's remarks were supported by the Mayor of Strathalbyn (Mr. J. W. Elliott). Capt. S. A. White, C.M.B.O.U. (Vice-Chairman of the Advisory Board of Agriculture), first apologised for the absence of the Hon. the Minister of Agriculture (Hon. G. F. Jenkins, M.P.), and said how pleased he was to have the honor and the privilege of opening a conference of primary producers who were, without doubt, the backbone of the State. He hoped that the producers would have a profitable and enjoyable conference, and would leave the hall at the conclusion of the gathering feeling that they had learned something that would be of use to them in the pursuance of their daily occupations. He then declared the conference open. Mr. H. Hamblyn, a delegate from the Rapid Bay Branch, read a paper, "Fat Lamb Raising," in the course of which he expressed the opinion that the southern areas of the State were eminently suited for the raising of fat lambs for the local and overseas markets. Many farmers were of the opinion that they could grow top-priced wool and fat lambs at one and the same time. That was a mistake. If fat lambs were the object in view, the wool should only be regarded as a secondary item. If producers could put good, prime, six months' old lambs weighing 50lbs. on the market they would find a ready sale for them. One of the main factors to ensure success was that the farmer should study local conditions and so arrange for the "drop" to take place that the life of the lamb would include the best five or six months of the year. The farmer should not worry about the fluctuations of the market, but devote more attention to the maturity of the lamb. For the southern districts he favored a long woolled crossbred ewe, mated with a Shropshire ram. The lambs should be dropped in May and not later than June. Tailing should be performed with the searing iron when the lambs were from three to four months old. On a farm on which fodders were grown for fat lamb raising, the first feed for the ewe and lamb would in all probability be an early sown crop of barley, followed by oats,

then rape or lucerne, and finally peas. With the provision of fodder the farmer should not fail to realise the importance of a change of feed for the stock. If possible, the ewes and lambs should be given a change of pasture each day. Ample provision should also be made for a good supply of water. If the fodder crops yielded very heavy returns, particularly with rape or lucerne, the paddocks should be divided with hurdles in order to minimise waste that might be caused by the sheep grazing over the fields. An interesting discussion followed, in which Messrs. J. Brown (Port Elliot), C. W. Ness (Rapid Bay), the Government Dairy Expert (Mr. P. H. Suter), Mr. H. B. Welch (Port Elliot), the Superintendent of Experimental Work (Mr. W. J. Spafford), Mr. W. H. Cuming, and Mr. J. Saunders (Strathalbyn) took part. This was followed by a paper, "Hedges around Homestead, Orchard, and Pleasure Grounds," by Mr. W. E. Hargreaves (Port Elliot Branch). After the luncheon adjournment Mr. E. Bottrill (Strathalbyn) moved and Mr. T. Collett (Strathalbyn) seconded, "That the Advisory Board be asked to approach the Railways Commissioner with a request that a moveable partition be provided in the trucks used for the carriage of pigs and calves together." The motion was supported by Capt. S. A. White, Mr. S. Collett (Rockwood), the Government Dairy Expert (Mr. P. H. Suter), and Mr. W. E. Hargreaves (Port Elliot). A paper dealing with the subject, "Destruction of Rabbits," was contributed by Mr. R. Walsh (Rapid Bay). Mr. Walsh expressed the view that rabbits could be kept under reasonable control if proper methods were adopted, but for any measure to be successful it was necessary for the farmers to co-operate in their efforts. The poison cart should be used after a fall of rain. When the baits were being prepared, bran should be mixed with the pollard so that they would not become hard. After a paddock had been treated with the poison cart, ferrets and traps should be brought into use. Finally, all the holes should be filled in. Large warrens, the speaker thought, should be dug out during hot weather, and if that were done a few times the rabbits would soon leave them. All places likely to provide harbors for rabbits should be removed, the farmers keeping in mind the fact that only by persistent and co-operative efforts would they keep the pest under control. The discussion which followed indicated that the majority of members were of the opinion that one of the best means of dealing with the rabbits was to use the fumigator and other methods of killing the rabbits in the burrows. Mr. H. Warner, a delegate from the Milang Branch, then read a paper, "Crop Rotation," which provoked a keen and interesting discussion. Mr. J. Brown (Port Elliot) gave a short address in which he dealt with the irrigating and drainage of land. The evening session was opened with a "Free Parliament," in the course of which it was decided on the motion of Mr. C. W. Ness (Rapid Bay), seconded by Mr. G. G. Cant (Rapid Bay), "That Branches of the Agricultural Bureau represented at this conference should approach their respective district councils with the object of bringing about the establishment of a District Councils Vermin Board, and the appointment of an officer or officers to supervise the destruction of vermin in their districts." Mr. W. H. Cuming (Strathalbyn) then moved

"That the Stock and Brands Department be asked strictly to enforce the provisions of the Stock Diseases Act. Mr. S. Collett (Rockwood) seconded. Mr. G. W. Montgomery (Strathalbyn) then moved and Mr. J. McCheriton (Strathalbyn) seconded, "That the Noxious Weeds Destruction Act be amended." The resolution was carried. On the motion of Mr. E. R. Heath (Rockwood), seconded by Mr. S. Collett (Rockwood), it was resolved "That this conference recommends the Government to conserve the waters of the Finniss and Angas Rivers for the purpose of irrigating the plains of Strathalbyn and the surrounding districts." Dr. Formby seconded the resolution, which was carried. The Blackheath Branch submitted the following questions:—(1) At what time of the year is it best to lay poison for foxes? (2) Over how long a period should it extend? And (3) What is the best bait and how can it be laid to ensure the best results? Mr. W. H. Cuming (Strathalbyn) thought poisoning should be started in February and continued during March and April. He cited a case where 80 foxes had been destroyed with baits prepared of bread and butter. Poisoning, he thought, should be continued throughout the whole of the year. Mr. C. W. Ness (Rapid Bay) thought the baits should be set out before lambing and just after the first rains. Birds treated with strychnine had given him the best results. Mr. H. M. Hassam (Milang) asked "What is the difference between agricultural lime and burnt lime, and what are the benefits to be derived from their use?" The Superintendent of Experimental Work (Mr. W. J. Spafford) said the Fertilisers Act described agricultural lime as finely ground limestone, shells, or marble. Burnt lime was actually the burnt limestone. The main work that lime did in the soil was to correct bad mechanical conditions, to correct excessive acidity, liberate plant food, and encourage bacteria. The addition of lime to clayey and sticky soils was the only way quickly to overcome that condition. Liming the soil was an expensive undertaking, and the speaker was doubtful whether it was worth while to apply it where farmers only intended growing such as cereal crops. In reply to further questions Mr. Spafford said an application of lime to the soil would not assist in the killing of the plant known as "pig face." Regarding the action of lime on sorrell he said that, whilst lime did not actually kill the sorrell, it had the effect of encouraging the growth of the desirable plants and crops to such an extent that they checked the development of the sorrell. On the motion of Mr. W. H. Cuming (Strathalbyn), seconded by Mr. F. W. Allison (Strathalbyn), it was decided that the 1924 conference should be held at Port Elliot. The Mayor (Mr. J. Elliott), on behalf of the town of Strathalbyn, thanked the officials for the useful budget of information they had conveyed to the producers of the district during the various sessions of the conference. Mr. S. Collett (Rockwood) seconded a vote of thanks, which was carried with acclamation. The Secretary of the Advisory Board (Mr. H. J. Finnis), on behalf of the Departmental Officers, responded, and was supported by the Field Officer (Mr. S. B. Opie). Mr. H. Welch (Port Elliott) proposed, and Mr. W. E. Hargreaves seconded, a vote of thanks to the Chairman (Mr. Saunders) and the Hon. Secretary (Mr. F. W. Allison) of the local Branch for the excellent way in which they had conducted the conference.

AGRICULTURAL BUREAU CONFERENCE AT LAMEROO.

At Lameroo, on Tuesday, August 28th, delegates representing the Claypan Bore, Parilla Well, Geranium, Clanfield, Parilla, Pinnaroo, and Lameroo Branches of the Agricultural Bureau met in Conference. The chairman of the local Branch (Mr. P. J. James) presided over the gathering, and had with him on the platform, the Director of Agriculture (Pro. A. J. Perkins), the Horticultural Instructor (Mr. Geo. Quinn), Field Officer (Mr. S. B. Opie), and the Secretary, Advisory Board of Agriculture (Mr. H. J. Finnis), representing the Department of Agriculture. In the absence of the Minister of Agriculture (Hon. G. F. Jenkins, M.P.), the Director of Agriculture (Professor Arthur J. Perkins) delivered the opening address. After having congratulated the district on the satisfactory character of the season from their point of view, he referred to the somewhat problematical question of the price of wheat for the immediate future, an aspect of agricultural affairs which was worrying most farmers. They could not expect the the highly remunerative prices which had prevailed of recent years, to continue indefinitely, he said, but wheat sometimes showed a tendency to fall below the average cost of production. The prospect at the present time was disquieting, and there was nothing to which they could turn with greater prospect of improving the position than a careful examination of the expenditure involved in production, with a view to reducing it to a minimum. This involved keeping careful notes of all expenditure and receipts and analysing these data at the end of the year. This was actually being done at the present time at the Government Demonstration Farm at Turretfield, and he was hopeful of being able to undertake a similar examination of accounts of several privately owned farms in different portions of the State, with a view of working out and analysing the results. As a means of increasing the revenue of their holdings, they would probably find when their farms were securely fenced, properly subdivided, and generally improved, that they would be able to turn to keeping sheep. He had much pleasure in declaring the Conference open, and expressed the hope that their deliberations would help in the general working of their farms.

Papers.

The papers read at the Conference included "Farm Management and Efficiency," by Mr. P. H. Jones (Pinnaroo Branch); "Utility Poultry," by Mr. W. Krierwaldt (Lameroo Branch); "The Manufacture of Woollen Goods in Australia," by Mr. R. L. McKenzie (Pinnaroo Branch); and "A Method of Account and Record Keeping for Farmers," by Mr. A. L. Orwell (Clanfield Branch). Each of these papers was in turn supplemented by criticism.

Resolutions.

At the instance of Mr. R. L. McKenzie (Pinnaroo Branch), seconded by Mr. H. C. Fewings (Pinnaroo Branch), it was resolved "That the Advisory Board be asked to request the Government to offer a bonus

for the eradication of take-all," and on the motion of Mr. L. Orwell (Lameroo Branch), seconded by Mr. W. Krierwaldt (Lameroo Branch), it was resolved "That this Conference desires the formation of a Circulating Library of Agricultural Literature for the Branches of the Agricultural Bureau." It was further resolved that the 1924 Conference should be held at Pinnaroo, the local arrangements being undertaken by the Parilla Well Branch.

ADVISORY BOARD OF AGRICULTURE.

The monthly meeting of the Advisory Board of Agriculture was held on Wednesday, August 8th, there being present Captain S. A. White (Vice-Chairman), Colonel J. Rowell, Messrs. C. J. Tuckwell, F. Coleman, A. M. Dawkins, H. Wicks, and the Secretary (Mr. H. J. Finnis). Apologies were received from Professor Arthur J. Perkins, and Messrs. W. J. Colebatch, T. H. Williams, and W. J. Sandford.

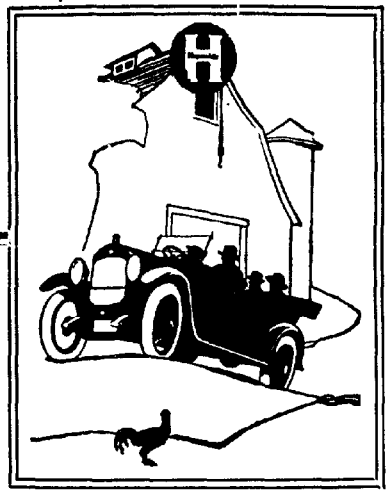
Woolly Aphis Parasite.—The Horticultural Instructor (Mr. G. Quinn), in reporting on a resolution received from the Cherry Gardens Branch of the Agricultural Bureau suggesting that the woolly aphis parasite (*Aphelinus mali*) should be introduced into the State and distributed amongst infested orchards, said he was expecting to receive in the course of a few days a supply of the insects through the Government Entomologist from the Cawthron Trust Institute of New Zealand. The Secretary was instructed to advise the Branch accordingly.

Wheat Prices.—Arising out of a resolution, which was carried at the Conference of Lower Northern Branches of the Agricultural Bureau, "that the Advisory Board should be asked to ascertain the reason for the difference in the quoted prices of wheat in South Australia and those of other States," the Secretary of the Board was instructed to communicate with the Chambers of Commerce in Victoria and New South Wales. A reply was received from the Corn Sectional Committee of the Victorian Chamber of Commerce as follows:—"I beg to acknowledge receipt of your letter of 13th ult., which was referred to the Corn Trade Sectional Committee of this Chamber for report. I am directed by the Chairman of the Section to advise you that in the opinion of members of the Committee the Sydney and Melbourne quotations are more or less fictitious for more than one reason. In the first place, owing to the policy of the pools in Victoria and New South Wales in quoting a local price to millers and giving a varying rebate to them for export purposes, the prices in Melbourne and Sydney have been very difficult for the press to arrive at. It should also be borne in mind that the rebate allowed by the Victorian Pool to millers is not published, nor are the sales made by the pool of wheat overseas (which have taken place considerably

under the value appearing in the press), made public. I would also like to point out that Victoria has no railway shunt or wharfage, which would make a difference of 1¼d. per bushel as against South Australia. Furthermore, South Australia has been competing at the world's parity, and this would account for the fact that the South Australian Pool stocks are very low, all the wheat which is being held in South Australia belonging to farmers who have stored it with the trade. The Victorian and New South Wales farmers still have a great deal on hand. As a further illustration, I might mention that free wheat was offering in Sydney a few days ago at 4s. 9d. without finding buyers, whereas the pool price is nominally stated to be 5s. for bagged wheat."

From the Sydney Chamber of Commerce, Incorporated:—"In reply to your favor of the 13th instant, I can, to some extent, understand that farmers in your State may find it difficult to reconcile the difference in the price of wheat quoted in the press in various States. I believe the custom here is for the commercial editors to send their representatives round amongst millers, dealers, shippers, &c., with a view to securing information from day to day as to the course of the local market, and, on the information so obtained, base their quotations from day to day, or from week to week, as the case may be. The position here has until quite recently been different to that in the other States owing to the droughty conditions which existed over the greater portion of the State, and induced the New South Wales Voluntary Pool authorities to hold the wheat in the pool against a possible crop failure by asking the prices certainly unwarranted by the saleable return which could be obtained for cargoes shipped to European destinations. That position has now been relieved by the recent rains over practically the whole of the wheat-growing country, although more moisture is still needed over the northern areas. The pool has now been chartering some tonnage and effecting parcel shipments as well, and, according to press returns, are now going to ship some 200,000 tons of wheat which had been held in reserve. Practically the whole of the bulk wheat has been controlled by the Wheat Pool, but as regards the bagged wheat, the position has been somewhat different, and many owners thereof have sold direct to shippers and millers at figures which permitted either shipment of wheat to oversea destinations, or enabled millers to make flour at competition prices. It is, however, well known that millers have been seriously handicapped in their export business by the impossibility of securing wheat on basis of world parity to enable them to make flour, which could be sold in competition with the millers of other countries, and indeed, other States of the Commonwealth. Quite a considerable quantity of flour orders, which came here during recent months, have been executed by millers at other ports."

Carriage of Stock on Railways.—The recent Conference of Upper Northern Branches resolved—(*a*) "That the Advisory Board be asked to approach the Railways Commissioner with reference to the delay in the carriage of stock on railways." It was decided to transmit the matter to the Railways Commissioner. (*b*) "Transmission of cancer



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That is one of the simple secrets of HUPMOBILE long life, why the earliest models we built are still in use in all parts of the world.

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INSPECT OR WRITE FOR INFORMATION,

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PIRIE STREET, ADELAIDE.

from animals to human beings." The same Conference also resolved "That the Stock Department be asked to supply a report on the possibility of the transmission of cancer from animals to human beings." The Secretary was instructed to ask the Stock Department to furnish a report on the mater.

Standard Fruit Case.—A resolution was received from the Blackwood Branch dealing with the branding of fruit cases. The Secretary was instructed to forward the resolution to the Minister for his information.

Upper Sturt Water Scheme.—The Blackwood Branch also submitted a resolution relating to the proposed Upper Sturt water scheme. The resolution was received.

Bird Pest.—The following resolution was received from the Cherry Gardens Branch:—"That the Advisory Board be asked to approach the Hon. the Minister of Agriculture to ascertain if the Government can in any way assist the orchardist in combating the bird pest, principally the parrot and the starling."

The late Mr. R. Marshall.—On the motion of Colonel Rowell, seconded by Mr. A. M. Dawkins, the Secretary was instructed to send a letter of condolence to the family of the late Mr. Richard Marshall.

New Branches.—Approval was given for the formation of new Branches at Cobdogla, Mannanarie, and Light's Pass, with the following gentlemen as foundation members:—Cobdogla—Messrs. R. H. Shueard, A. J. Atkinson, J. McBride, W. Young, A. G. Ireland, A. Bonshear, E. C. Wegener, E. G. and R. Poyner, R. Semmens, L. W. Clements, G. H. Kokegai, C. M. Almond, T. J. English, R. and J. Mudge, J. R. McGurie, H. T. Coats, J. W. Proud, A. E. Spencer, H. Schneider, W. H. Sutton, R. James. Mannanarie—Messrs. J. M. Harvie, J. H. Cundy, G. S. Young, P. J. O'Loughlin, R. von Bertouch, E. D. Bowman, W. Pile, L. E. Travers, O. Clark, T. W. Chesson, N. A. Lawson, J., A. T., and A. Symons, H. E. and J. M. Robinson, W. Oake, W. Crawford, A. L. Jones, L. F. Gerke, A. A. Cadjow, A. Bailey, W. D. and R. McK. Campbell, J. H. Thomas. Light's Pass—Messrs. S. and L. Plush, B., F. W., and B. Boehm, T. and B. Gerlach, R. F. Jacob, L. Cope, S. Ellis, E. Polst, P. Sporn, P. Spanagel, E. A. and A. Mader, C. A. Verrall, J. J. Stolz, B. Scholz, A. Pfeiffer, H. Fuller.

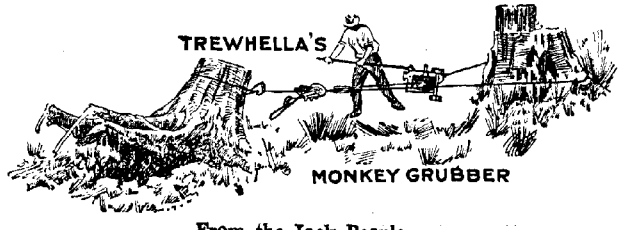
New Members.—The following names were added to the rolls of existing Branches:—Goode—E. M. Morcombe, L. Dacre, W. Dacre; Blackheath—B. Strauss; Balhannah—G. R. Cowell; Shoal Bay—Chas. Hall; Redhill—C. R. Coleman; Moonta—R. Retallick, C. Cook; Pinnaroo—A. Bennett; Beetaloo Valley—J. Venebubles; Rosedale—S. Gursanske; Lameroo—J. Harder; Wanbi—W. S. Delamere, H. Ridgley; Blackwood—S. Opie; Willowie—S. H. Moundford, C. L. Schmidt; Lone Gum and Monash—H. Rayner; Rapid Bay—S. J. Ford; Parilla—E. D. Elain, A. W. Threadgold, C. Neindorf, K. Goldsworthy; Crystal Brook—H. C. Williams; McLachlan—H. Whittle, L. Pearce, J. E. Buzacott; Williamstown (Women's)—Mrs. A. E. Williams, Mrs. W. Wilkin, Miss D. Wilkin; Talia—A. Cameron; Ren-

mark—O. Weste; Cherry Gardens—W. H. King; Hartley—D. G. Taylor, A. V. Lehmann; Rendelsham—C. Fairhmann, C. W. Chambers, M. Galwey; Tarlee—J. Dee; Colton—F. W. Usher, C. G. Olson; Millicent—W. H. Hatcley, J. W. Williams, J. H. Daniel; Morehard—C. Longbottom, A. Saunders; Aldinga—B. Lovelock, H. Ellbourn; Marama—T. W. Wheatley; Maltee—E. L. Winton, H. Tuestner, A. J. Marchant; Geranium—J. Bowden, E. Rogers; Williamstown—H. C. Chalk, R. Wilson; Allandale East—F. Tooth, Thos. Earl, jun., M. McCabe, T. E. Lock; Wilkawatt—K. Bowman; Kybybolite—M. Glynn; Balhannah—Rev. R. V. S. Adams, H. F. Rose, B. Cullen, A. Adams, C. O. Smith; Kongorong—C. Dixon, W. A. Butler, D. McNicol, E. Johns; Nelshaby—W. Gordon, V. Sellick, P. Noble; Kilkerran—E. H. Dutschke, B. J. Gregory; Whyte-Yarcowie—F. J. McCallum; Hookina—R. Wardleworth; Block E.—H. Smith; Winkie—C. McDonald; Murray Bridge—E. Newmann, J. Anderson; Monarto South—E. Tilbrook; Lake Wangary—R. Puckridge, R. Hull; Nantawarra—G. M. Herbert; Collie—B. Cummins, J. Pettick; Cungena—J. Lee, H. J. Bennie, W. W. Gerswortz, G. B. Gerswortz, G. Johansen, J. Ettridge; Edillilie—M. T. Morgan, D. S. Morgan, C. F. Harder; Moorook—W. Botting, J. Swansbury, H. Gray; Penola—Rev. J. M. Taylor, Rev. R. Woodger, V. Pounsett, H. F. Alder; Millicent—E J. Mitchell, C. J. Hutchesson; Pinnaroo—J. E. Symons; Saddleworth—F. T. T. Smith.

260 MEN FOR YOUR STUMP GRUBBING

With these men at your disposal you could do quite a lot of clearing. In the **"Monkey" Grubber** you get their strength, without the upkeep, in a simple, compact, easy-to-handle form. With the short lever supplied, the power is in your own hands. This sturdy machine is equipped with ropes equal to the heavy demands made on grubbing tackle, and each is fitted with hook and loop couplings—splices and loose pins have been banished. A fast gear and rope shortener help you to get quickly to the actual pull, and an automatic lowering gear allows you to release from a strain. Standard equipment will clear 1½ acres from an anchor.

REMEMBER! FOR YOUR GRUBBING THERE'S ONLY



From the Jack People,

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RIVER MURRAY HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR JULY, 1923.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during July.	Per Cow during July.	Per Cow October to July.	Per Herd during July.	Per Cow during July.	Per Cow October to July.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
1/C	30·13	21·39	21247·5	705·19	7326·51	809·08	26·85	293·51
1/E	23	22·16	11637·5	705·98	5663·16	535·66	23·29	250·37
1/J	20·84	19·61	10708·5	513·84	5171·60	491·40	23·58	236·76
1/L	16·84	13·35	9238	548·57	5546·18	439·42	26·09	255·93
1/M	23	18·16	9016·5	392·02	4995·92	466·85	20·30	249·55
1/R	16·33	12·23	7381	451·99	4862·47	384·39	23·54	245·59
1/T	12·06	10·42	5941	492·62	5266·19	299·19	24·81	264·89
1/U	16·13	15·06	11210·5	695·01	6514·05	490·53	30·41	281·22
1/W	20·39	18·84	11002·5	539·60	6111·89	430·29	21·10	231·37
1/X	18·23	13·23	8600	471·75	5392·79	358·67	19·67	241·38
1/Y	24·68	18·84	14513	588·05	6171·86	569·60	23·08	264·63
1/Z	20	15·26	10322·5	516·13	5036·94	445·71	22·29	226·61
*1/Aa	7	6·90	3655·5	522·21	6182·50	192·38	27·48	274·87
*1/Bb	8	7	3534	441·75	4912·20	163·74	20·47	216·13
†1/Cc	16·67	15·45	10549·5	632·84	3548·09	461·72	27·70	153·64
‡1/V	14·06	14·06	7398	526·17	3520·35	341·13	24·26	156·74
Means	17·96	15·12	9747·22	542·72	5788·89	429·99	23·94	255·54

* Entered Association November 1st, 1922. † Entered Association December 1st, 1922.
‡ Entered Association Februray 1st, 1923.

COWS YIELDING 1,000GALLS. OF MILK OR 400LBS. OF BUTTERFAT DURING A LACTATION PERIOD.

Name of Cow.	Owner.	No. of Days.	Milk.	Butterfat.
			Gallons.	Lbs.
Rainbow	C. J. Morris, Monteith	308	1123·75	427·53
Tracey	C. J. Morris, Monteith	304	1055·00	415·23

MT. GAMBIER AND DISTRICT HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR JULY, 1923.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during July.	Per Cow during May.	Per Cow August to July.	Per Herd during July.	Per Cow during July.	Per Cow August to July.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
A	20	7·35	2804·5	140·23	4818·89	104·85	5·24	207·05
B	6·87	4·65	3511	511·06	8635·13	144·88	21·09	360·32
C	18·94	16·71	8522·5	449·97	6406·00	289·73	15·30	255·45
D	13	8·55	2529·5	194·58	4726·63	98·35	7·57	188·71
E	11	8·10	3173·5	288·50	6461·27	125·97	11·45	285·25
F	20	14·81	6945·5	347·28	5570·82	343·03	17·15	229·90
G	1	1	1240	1240	8751·24	52·58	52·58	395·01
H	24	13·77	9161·5	381·73	5322·03	349·78	14·57	222·05
I	12	5·61	2993·5	249·46	5519·99	121·16	10·10	227·76
J	11	5·19	2752·5	250·23	7398·33	123·98	11·27	318·55
K	21	13·74	3706	176·48	6117·75	160·58	7·65	261·34
L	30·03	16·29	5240·5	174·51	4554·44	215·22	7·17	207·68
N	12	Nil	Nil	Nil	3719·85	Nil	Nil	150·90
O	37·42	23·29	11908	318·23	4204·28	427·71	11·43	170·80
Q	33	9·84	5198·5	157·53	4536·02	200·27	6·07	185·91
R	16·90	11·29	8373	495·44	8792·65	361·20	21·37	385·81
Means	18·01	10·01	4878·75	270·89	5515·60	194·95	10·82	231·86

COWS YIELDING 1,000GALLS. OF MILK OR 400LBS. OF BUTTERFAT DURING A LACTATION PERIOD.

Name of Cow.	Owner.	No. of Days.	Milk.	Butterfat.
			Gallons.	Lbs.
Horney	E. W. Tollner, Mt. Gambier.....	319	1110·35	441·51
Suck	E. W. Tollner, Mt. Gambier.....	319	954·55	402·54
Nobby	E. W. Tollner, Mt. Gambier.....	319	789·70	418·09

DAIRY AND FARM PRODUCE MARKETS.

A. W. Sandford & Co., Limited, reported on September 1st, 1923:—

BUTTER.—During the month supplies of dairy products have increased considerably, but the wintry conditions have made the season later than usual, and whereas during August last year big quantities of butter were being shipped overseas, it was only at the close of last month that shipments were being made to London. Since our last report values of top grades have come back, but towards the latter end of the month there has been a slight firming in rates. Choicest factory and creamery fresh butter in bulk, 1s. 4¼d.; second grades, 1s. 2½d. to 1s. 3d.; best separators and dairies, 1s. 3d. to 1s. 4d.; fair quality, 1s. 2¼d. to 1s. 2¾d.; store and collectors, 1s. to 1s. 2d.

EGGS.—The seasonable increase for this time of year was interfered with by the cold weather, and, although the price came back, a reaction set in, and the market closed firm at 1s. per dozen for fresh hen; duck, 1s. 1d.; with local and interstate buyers operating freely.

CHEESE.—Fair-sized consignments arrived weekly from the South-Eastern factories, with prices recording minor alterations. At the moment local and interstate buyers are readily clearing all available, the range being from 1s. 1d. to 1s. 2½d. for large to loaf.

HONEY.—At the beginning of the month interstate buyers were purchasing on this market for their requirements of all grades, but towards the close fairly large stocks were held, and difficulty was experienced in effecting sales, the result being that values eased. Prime clear extracted, in liquid condition, 3¾d. to 4d.; best candied lots, 3½d.; lower grades still neglected at down to 2d. per lb. Beeswax readily saleable at 1s. 3½d. to 1s. 4d. for best samples.

ALMONDS.—Fairly large parcels continue to arrive weekly, and are meeting with ready sales. Brandis, 9d. to 9½d.; mixed softshells, 8d. to 8½d.; hardshells, 4¼d. to 4½d.; kernels, 1s. 3½d. to 1s. 4d.; walnuts, 1s.

BACON.—Curers had difficulty in securing their supplies of the live hog both here and in the eastern States, which brought about a firming in the market. However, the higher prices did not affect sales, for good business has been transacted in this line during the month. Best factory-cured sides, 1s. 2d.; hams, 1s. 5½d. to 1s. 6d.; middles, 1s. 4½d.; rolls, 1s. 2d. Hutton's "Pineapple" brand lard, in packets, 1s. 2d.; in bulk, 1s. 1d. This line is very scarce.

LIVE POULTRY.—Numerous buyers exhausted their stocks of all classes of birds, and in spite of our submitting fairly extensive catalogues the supplies were short of requirements, with the result that we secured most satisfactory values for our consignors. It is anticipated that these high values will rule for some time to come, and we advise farmers to forward their surplus birds. Values at the close of the month being:—Prime roosters, 5s. to 7s. 6d. each; nice-condition cockerels, 3s. 6d. to 4s. 9d.; poor-condition cockerels, 2s. 9d. to 3s. 3d.; plump hens, 4s. to 5s. 6d.; medium hens, 3s. to 3s. 9d.; some pens of weedy sorts lower; geese, 6s. to 7s.; ducks, good condition, 5s. to 7s. 10d.; fair condition, 3s. 6d. to 4s. 9d.; turkeys, good to prime condition, 1s, 1d. to 1s. 6d. per lb. live weight; fair condition, 10d. to 1s. 0½d. per lb.; fattening sorts, lower; pigeons, 10½d. each.

POTATOES.—During the latter part of the month market has been steady, Victorian potatoes selling at from 16s. to 17s. per cwt. on trucks Mile End; parcels a shade lower.

ONIONS.—Best Mount Gambier dry onions selling at 7s. 6d. per cwt. on trucks.

MAKE SURE of POULTRY PROFITS NEXT WINTER.



Most Poultry Keepers are getting a satisfactory supply of eggs now, but on the number of eggs which their hens lay NEXT WINTER depends the profit which the season will show.

To have a good supply of eggs for sale when prices are high is the only way to make certain of profits, and the surest, cheapest, safest way to have that good supply is to use

'Karswood' Poultry Spice

(Containing Ground Insects)

Which costs only a ha'penny a day for every 12 fowls. Here is a letter typical of many we receive from users. Read it and resolve to start 'KARSWOOD' feeding now, in preparation for the moult and Winter period.

WONDERFUL RESULTS.

"9, Austral Terrace, Malvern, S.A.,
20/8/21.

Dear Sirs—I would like to inform you of the results I have obtained from using 'KARSWOOD' Poultry Spice. I was first informed of this spice by a friend of mine, who strongly advised me to use it during the moulting period. I was somewhat dubious at first in using it, as I was not a believer in spice for fowls, but after seriously considering it on account of the scarcity of eggs, I tried a packet, and am glad to state that I have had wonderful results from it. After using it for a fortnight you could see a wonderful improvement in the condition and the plumage of the birds, it having considerably assisted them through the moult, and actually started them laying in the middle of it. After using several packets of 'KARSWOOD,' and when my fowls were laying heavily, I decided to leave off 'KARSWOOD,' but after a few weeks my eggs decreased 50%. I again decided to test the qualities of 'KARSWOOD,' and glad to say that after a few days' use my fowls were again laying heavily. I am writing this to you as I feel that you have given to the poultry keeper a chance in obtaining good results from their fowls, and to 'KARSWOOD' must be given the credit of reducing the usual shortage of eggs, as you well know not prevalent this winter. You may use this letter in any way you think fit, and again thanking you.

I am, yours faithfully,
(Signed) WALLIE R. ROBINSON."

Start feeding 'KARSWOOD' now and you insure your winter profits in just the same manner that 500,000 other Poultry Keepers do. It costs only a ha'penny a day for every dozen fowls, yet the results are sure and good.

NOTE THE ECONOMY.

One tablespoonful (½oz.) of 'KARSWOOD' Poultry Spice (containing ground insects) is sufficient for 20 hens for one day. So that it costs you less than a ½d. a day for every 12 birds.

1s. packet (½lb.) supplies 20 hens 16 days.
2s. packet (1lb.) supplies 20 hens 32 days.
13s. tin (7lbs.) supplies 140 hens 32 days.
14lbs. tins, 25s. 28lbs. tins, 48s.

Makes 12 Hens Lay for ½d. a Day.

MAKE A TEST.

Get a 1s. packet of 'KARSWOOD' Poultry Spice from your local storekeeper, grocer, or produce dealer—try it for a fortnight on half a dozen hens. Do not expect immediate results. 'KARSWOOD' works naturally, it does not force. It takes a fortnight or three weeks to show results, but they are good and sure. If your local dealer cannot supply you, drop a postcard either to the agents for your State (address below) or to 'KARSWOOD,' Box 2138, G.P.O., Sydney, and you will be put in touch with your nearest supplier.

AGENTS FOR SOUTH AUSTRALIA—

S. C. EYLES & Co.,

CURRIE ST. ADELAIDE.

NOTE.—If supplied by Wholesale Agents direct, postage must be added to cost.

THE AGRICULTURAL OUTLOOK.

REPORTS FOR THE MONTH OF AUGUST.

The following reports on the general agricultural condition and outlook of the areas represented by the Government Experimental Farms mentioned below have been prepared by the respective managers:—

Booborowie.—Weather—The weather during August has been ideal. The rain kept off sufficiently to enable farmers to make progress with their fallowing operations, and mild weather has caused rapid plant growth for this particular locality. Up to the time of writing 198 points of rain have been registered. Crops—The crops are now making rapid growth, and with a favorable spring some heavy yields should be obtained. Natural feed is now making good progress. Stock—All in good condition and healthy. Pests—No pests worth mentioning just at present. Miscellaneous—Farmers are very busy with their fallowing, which has been greatly delayed owing to the excessive wetness of the ground.

Kybybolite.—Weather continued wet until the middle of the month, but since then milder conditions have prevailed; 2½in. were recorded for the month. The total for the year is now over 16½in., which is 1½in. above the average for the period for past 18 years. Approximiately 16in. have fallen since May 5th. Crops are all backward, and a fair proportion have been drowned out and water grass has overcome them. Areas having good drainage and fair amount of organic matter are looking nice and healthy. Small areas are being ploughed late this month and sown to barley and peas, with the hope that the spring will favor their development. Preparations for summer crops and fallows are in hand. Natural feed has improved considerably during the latter half of the month. Stock are in very fair condition, but the lack of plenty of green feed prevents the dairy cows from producing really good returns.

Turretfield.—Weather—The beginning of the month was wet, but the weather on the whole has been seasonable; 237 points of rain have been registered. Crops are making very little improvement, even where they came up well. Large yellow patches of unhealthy plants are to be seen. Natural feed is not very plentiful, but should come along shortly. Stock—In fair condition. All large stock still require hand feeding. Miscellaneous—Fallowing is very late and is now being pushed on with.

Veitch.—Weather—We have had 159 points of rain to date for August—Veitch average for same month, 149 points. Conditions generally have been ideal for forcing on growth both in crops and feed. We required more frosts earlier in the month. Crops are all making good headway, and in some cases very rank growth is showing, but throughout the district crops are looking exceptionally well. Natural Feed—Good stock feed is now available in fields left to grass. Stock are all in healthy condition. Pests—Rabbits are the only pest giving any trouble. Miscellaneous—A large area of new ground is being rolled this year, especially west of the railway line.

IMPORTS AND EXPORTS OF FRUITS, PLANTS, ETC., JULY, 1923.

IMPORTS.

Interstate.

Apples (bushels)	9,266
Bananas (bushels)	9,021
Custard apples (bushels)	2
Oranges (bushels)	2
Passion fruit (bushels)	299
Pears (bushels)	4
Pineapples (bushels)	887
Tomatoes (bushels)	12
Peanuts (bushels)	2
Carrots (bags)	40
Onions (bags)	1,031
Potatoes (bags)	29,473
Swedes (bags)	51
Plants (packages)	41
Trees (packages)	23
Bulbs (packages)	3
Seeds (packages)	57
Wine casks, empty (number)	2,003

Fumigated—21 packages trees, 8 packages plants, 1 bushel oranges, 2 wine casks.

Rejected—2bush. custard apples, 2bush. tomatoes, 63 bags potatoes, and 27 second-hand cases.

Overseas.

Federal Quarantine Act.

One thousand one hundred and five packages seeds, &c.

EXPORTS.

Federal Commerce Act.

Six thousand seven hundred and ninety-two packages citrus fruit, 15,504 packages dried fruit, and 1 package plants were exported to overseas markets. These were consigned as follows:—

London.

Dried fruit (packages)	9,585
Citrus fruit (packages)	3,470

India and East.

Dried fruit (packages)	118
Citrus fruit (packages)	1

South Africa.

Dried fruit (packages)	2,356

New Zealand.

Dried fruit (packages)	945
Citrus fruit (packages)	3,321
Plants (packages)	1

Canada (Vancouver).

Dried fruit (packages)	2,500

RAINFALL TABLE.

The following figures, from data supplied by the Commonwealth Meteorological Department, show the rainfall of the subjoined stations for the month of and to the end of August, 1923, also the average precipitation to the end of August, and the average annual rainfall.

Station.	For Aug., 1923.	To end Aug., 1923.	Av'ge. to end Aug.	Av'ge. Annual Rainfall
Far North and Upper North.				
Oodnadatta	—	1·92	3·58	4·93
Marree	—	3·50	4·03	6·14
Farina	0·11	5·15	4·63	6·73
Copley	0·14	5·37	5·87	8·50
Beltana	0·46	5·89	6·12	9·65
Blinman	0·74	7·75	8·80	12·61
Tarcoola	0·44	2·44	5·26	7·91
Hookina	0·90	7·47	9·38	13·60
Hawker	1·32	9·96	9·02	12·93
Wilson	1·59	8·50	8·72	12·56
Gordon	1·18	5·79	7·89	11·60
Quorn	1·32	9·63	9·96	14·24
Port Augusta	0·96	5·46	6·56	9·68
Port Augusta West	0·82	5·13	6·55	9·74
Bruce	0·99	5·72	7·20	10·76
Hammond	1·52	9·15	9·05	11·90
Wilmington	1·96	13·62	12·83	18·44
Willowie	1·95	9·31	8·45	12·44
Melrose	2·94	19·96	15·56	23·88
Booleroo Centre	2·12	13·28	10·72	15·67
Port Germein	1·54	8·91	8·80	12·93
Wirrabara	1·94	14·73	13·75	19·85
Appila	1·78	11·11	10·08	15·01
Cradock	1·41	7·67	7·85	11·50
Carrieton	1·43	9·91	8·82	12 91
Johnburg	1·06	6·67	7·21	10·85
Eurelia	1·48	9·44	9·26	13·56
Orroroo	1·46	8·51	9·56	13·75
Nackara	0·61	5·46	8·33	11·85
Black Rock	1·41	10·75	8·71	12·73
Ucolta	0·78	5·58	8·28	12·10
Peterborough	1·53	10·08	9·05	13·53
Yongala	1·94	10·38	9·73	14·51
Lower North-East.				
Yunta	0·37	3·59	5·87	8·93
Waukaringa	0·43	4·47	5·97	8·61
Mannahill	0·70	3·88	5·82	8·79
Cockburn	0·16	4·00	5·65	8·42
Broken Hill, N.S.W.	0·20	4·31	6·77	10·08
Lower North.				
Port Pirie	1·21	8·01	9·32	13·55
Port Broughton	1·56	9·82	9·10	14·27
Bute	1·78	11·84	11·26	15·80
Laura	2·11	14·35	12·39	18·25
Caltowie	2·09	13 34	11·43	17·19
Jamestown	2·40	14·25	11·94	17·86
Bundaleer W. Wks.	2·06	13·49	11·94	18·05
Gladstone	2·36	15·97	10·87	16·22
Crystal Brook	2·11	11·28	10·95	15·93
Georgetown	1·98	15·64	12·68	18·50
Narridy	1·25	11·18	12·36	16·43
Redhill	1·41	11·19	13·07	16·93

Station.	For Aug., 1923.	To end Aug., 1923.	Av'ge. to end Aug.	Av'ge. Annual Rainfall
Lower North—*continued.*				
Spalding	1·91	10·62	13·43	
Gulnare	1·88	13·04	13·01	
Yacka	1·62	10·56	10·68	
Koolunga	1·46	10·25	11·07	
Snowtown	1·81	10·90	11·37	
Brinkworth	1·70	11·41	11·09	
Blyth	2·10	12·58	11·65	
Clare	3·96	21·08	17·26	
Mintaro	3·78	21·84	16·31	
Watervale	4·05	21·51	19·52	
Auburn	3·18	17·56	17·02	
Hoyleton	2·03	11·53	12·36	
Balaklava	2·17	10·60	11·03	
Port Wakefield	1·31	9·22	9·56	
Terowie	1·37	8·02	9·10	
Yarcowie	1·29	7·46	9·56	
Hallett	1·96	11·59	11·03	
Mount Bryan	2·28	14·26	11·28	
Kooringa	2·02	10·96	12·44	
Farrell's Flat	2·74	14·58	13·22	
West of Murray Range.				
Manoora	3·08	16·17	12·73	
Saddleworth	2·94	16·52	13·74	
Marrabel	4·08	19·89	13·69	
Riverton	4·41	20·25	14·46	
Tarlee	3·43	19·34	12·25	
Stockport	2·72	18·17	11·19	
Hamley Bridge	2·87	17·57	11·38	
Kapunda	2·72	17·75	13·76	
Freeling	2·41	17·80	12·34	
Greenock	3·65	21·71	13·83	
Truro	2·50	19·01	13·96	
Stockwell	2·44	19·82	14·00	
Nuriootpa	2·56	18·56	14·56	
Angaston	2·58	21·51	15·62	
Tanunda	3·26	21·87	15·57	
Lyndoch	4·54	27·68	16·02	
Williamstown	4·06	27·63	19·90	
Adelaide Plains.				
Mallala	2·40	16·40	11·21	
Roseworthy	2·52	17·45	11·98	
Gawler	3·01	17·91	13·44	
Two Wells	2·14	15·12	11·31	
Virginia	3·01	17·21	12·26	
Smithfield	3·76	19·29	11·95	
Salisbury	2·73	20·30	10·99	
North Adelaide	2·63	20·82	15·91	
Adelaide	2·26	18·55	15·22	
Glenelg	1·97	14·29	13·30	
Brighton	2·91	17·46	15·11	
Mitcham	2·70	23·26	18·14	
Glen Osmond	3·43	25·49	18·77	
Magill	3·46	26·18	18·28	

RAINFALL—*continued.*

Station.	For Aug., 1923.	To end Aug., 1923.	Av'ge. to end Aug.	Av'ge. Annual Rainfall	
Mount Lofty Ranges.					
·Gully	3·31	30·37	19·70	27·65	
West	6·14	44·84	34·09	46·59	
	5·94	43·86	32·39	43·92	
lon	4·52	29·24	24·05	32·98	
tt Vale	2·33	18·80	16·37	22·79	
nga	1·89	18·98	15·80	20·35	
ga	2·81	21·84	18·92	25·89	
	2·39	16·16	15·02	20·35	
ga	3·05	23·98	21·18	29·16	
nville	3·87	18·93	16·22	20·61	
hilla	3·66	22·51	17·13	23·10	
Pleasant	3·84	27·83	19·35	27·16	
ood	4·03	29·99	20·98	29·33	
acha	4·53	36·18	21·20	33·29	
ok Reservoir	5·13	37·17	—	—	
vale	5·39	36·33	25·72	35·55	
ide	4·05	30·00	22·90	32·11	
side	4·79	33·28	24·70	34·67	
	3·25	23·96	20·09	28·42	
Barker	4·53	30·98	22·21	31·18	
ga	4·40	32·84	23·65	32·96	
sfield	2·99	25·83	21·42	30·57	
ws	4·11	31·74	25·52	36·04	
albyn	1·61	12·92	13·59	19·32	
Murray Flats and Valley.					
gie	1·89	16·13	13·33	18·66	
g	1·28	10·07	12·95	15·40	
orne's Brdg.	1·26	11·51	10·01	14·61	
gton	1·89	10·63	10·03	14·77	
n Bend	1·78	10·60	9·68	14·55	
y Bridge	1·41	8·70	9·45	13·93	
gton	1·37	11·64	10·67	15·42	
um	0·96	6·71	8·07	11·64	
r	1·54	11·53	10·36	15·47	
t	1·33	9·38	8·60	12·29	
Reach	1·58	7·17	7·23	11·09	
hetown	0·68	4·06	6·78	10·16	
ada	2·54	12·82	11·02	17·54	
rlands	2·19	8·37	7·40	11·19	
n	1·01	5·28	5·96	9·30	
rie	1·25	5·18	6·32	9·91	
and Corner	0·79	4·73	7·13	11·07	
n	1·19	7·38	8·47	12·63	
ark	1·01	5·85	7·97	11·09	
sh	0·93	6·58	—	—	
West of Spencer's Gulf.					
	1·27	4·37	7·78	10·02	
Well	0·69	4·12	6·57	9·08	
r's Bay	1·41	10·45	9·48	12·16	
g	2·15	9·63	9·62	12·49	
a	1·40	8·07	7·39	10·36	
y Bay	1·94	11·33	8·08	—	
a	2·30	10·76	9·48	13·34	
ky Bay	2·40	12·11	11·71	15·10	

Station.	For Aug., 1923.	To end Aug., 1924.	Av'ge. to end Aug.	Av'ge. Annual Rainfall
West of Spencer's Gulf—*continued.*				
Talia	2·42	12·59	11·13	16·45
Port Elliston	2·27	15·15	12·82	16·55
Cummins	3·03	15·24	13·87	18·90
Port Lincoln	2·83	14·97	14·80	19·72
Tumby	1·86	8·26	10·02	14·76
Carrow	0·95	8·02	9·36	14·18
Arno Bay	0·71	8·27	8·84	13·30
Cowell	0·41	4·98	8·17	11·75
Yorke Peninsula.				
Wallaroo	1·04	9·84	10·37	14·18
Kadina	1·59	12·21	11·75	16·05
Moonta	1·51	11·06	11·32	15·38
Green's Plains	2·08	13·40	11·57	18·89
Maitland	3·04	17·88	14·74	20·15
Ardrossan	2·14	11·49	10·18	14·11
Port Victoria	2·79	14·29	10·40	15·47
Curramulka	2·55	14·55	13·20	18·22
Minlaton	3·74	16·85	13·13	17·91
Brentwood	2·26	14·25	11·38	15·83
Stansbury	2·55	15·24	12·16	17·04
Warooka	2·85	18·13	13·24	17·81
Yorketown	2·66	14·77	12·88	17·26
Edithburgh	2·15	13·32	12·07	16·58
South and South-East.				
Cape Borda	3·61	19·98	19·65	25·10
Kingscote	2·63	16·46	14·27	19·10
Penneshaw	2·07	12·81	13·57	19·39
Victor Harbor	2·49	15·71	15·40	21·45
Port Elliot	2·59	15·17	15·38	20·26
Goolwa	1·54	12·50	12·73	17·87
Pinnaroo	1·56	12·56	10·33	15·66
Parilla	1·62	11·60	9·39	14·65
Lameroo	2·03	13·04	10·55	16·37
Parrakie	1·50	11·66	9·42	14·54
Geranium	2·05	12·80	11·01	16·19
Peake	1·80	11·38	11·25	16·58
Cooke's Plains	1·90	12·75	10·32	15·04
Coomandook	1·72	11·32	12·04	17·48
Coonalpyn	1·92	14·17	11·99	17·42
Tintinara	1·55	10·21	12·62	18·60
Keith	1·70	14·40	12·11	18·17
Bordertown	1·48	14·60	13·04	19·44
Wolseley	1·69	16·01	12·21	18·12
Frances	2·43	16·42	13·06	19·78
Naracoorte	2·34	17·83	14·98	22·52
Penola	2·73	19·24	18·27	26·29
Lucindale	2·97	18·98	16·35	22·95
Kingston	2·69	18·85	18·65	24·47
Robe	2·40	19·95	18·71	24·59
Beachport	2·53	17·99	20·87	20·24
Millicent	3·33	25·29	21·76	29·36
Kalangadoo	3·56	26·02	—	—
Mount Gambier	2·97	20·86	22·01	31·24

AGRICULTURAL BUREAU REPORTS.

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Amyton	†	24	22
Angaston	*	—	—
Appila-Yarrowie	*	—	—
Arthurton	180	—	—
Ashbourne	‡	—	—
Balaklava	*	8	13
Balhannah	†	21	19
Barmera	190	25	22
Beetaloo Valley	168	—	—
Belalie North	*	22	20
Berri	‡	26	24
Big Swamp	‡	—	—
Blackheath	A.M.	28	26
Black Springs	‡	—	—
Blackwood	*	17	15
Block E	190	—	—
Blyth	176	1	6
Booleroo Centre	170	21	19
Borrika	*	—	—
Brentwood	*	20	25
Brinkley	*	22	20
Bundaleer Springs	*	24	22
Bute	*	25	23
Butler	A.M.	—	—
Calca	*	—	—
Cadell	*	—	—
Canowie Belt	*	—	—
Carrow	181	20	25
Cherry Gardens	190	25	23
Clanfield	*	—	—
Clare	A.M.	21	19
Clarendon	*	24	22
Claypan Bore	*	26	24
Cleve	*	19	24
Collie	‡	22	27
Colton	*	28	26
Coomandook	†	19	24
Coonalpyn	*	28	26
Coorabie	181	—	—
Cradock	*	—	—
Crystal Brook	‡	21	19
Cungena	184	—	—
Curreney Creek	192	28	26
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Darke's Peak	181	19	6
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Edillilie	184	29	27
Elbow Hill	A.M.	25	30
Eurelia	‡	14	19
Farrell's Flat	*	21	19
Frances	A.M.	29	27
Gawler River	*	24	22

Branch.	Report on Page	Dates of Meetings	
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Gumeracha	*	24	22
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Hartley	*	—	24
Hawker	*	25	23
Hilltown	*	—	—
Hookina	166	20	25
Inman Valley	*	—	—
Ironbank	†	22	20
Kadina	*	—	—
Kalangadoo (Women's)	†	—	—
Kalangadoo	‡	8	13
Kangarilla	‡	—	—
Kanmantoo	*	22	20
Keith	*	—	—
Ki Ki	*	—	—
Kilkerran	176	20	25
Kimba	*	—	—
Kingscote	*	—	—
Kingston-on-Murray	*	—	—
Kongorong	*	20	25
Koonibba	*	21	19
Koppio	184	24	22
Kybybolite	*	20	25
Lake Wangary	A.M.	22	20
Lameroo	*	28	26
Laura	170	22	27
Lenswood and Forest Range	‡	—	—
Lipson	184	—	—
Lone Gum and Monash	*	19	24
Lone Pine	A.M.	—	—
Longwood	‡	—	—
Loxton	*	—	—
Lucindale	*	—	—
Lyndoch	170	20	25
McLachlan	184	1	6
MacGillivray	*	25	23
Maitland	*	20	25
Mallala	A.M.	17	15
Maltee	§	21	19
Mangalo	*	—	—
Mannanarie	—	—	—
Marama	*	24	23
Meadows	*	26	24
Meningie	*	—	—
Milang	‡	8	13
Millicent	*	1	6
Miltalie	184	22	20

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Moonta	177	21	19
Moorak	‡	20	25
Moorlands	*	—	—
Moorook	*	21	26
Morchard	*	22	20
Morphett Vale	199	27	25
Mount Barker	*	19	24
Mount Bryan	168	—	—
Mount Byran East	*	—	—
Mount Compass	*	—	—
Mount Gambier	202	8	13
Mount Hope	*	22	20
Mount Pleasant	A.M.	—	—
Mount Remarkable	*	—	—
Mount Schank	204	26	23
Mundalla	*	19	24
Murray Bridge	‡	29	16
Mypolonga	*	19	24
Myponga	*	—	—
Myrla	190	22	20
Nantawarra	A.M.	20	25
Naracoorte	A.M.	8	13
Narridy	*	22	27
Narrung	‡	22	27
Neeta	*	—	—
Nelshaby	168	22	20
Netherton	‡	21	19
North Booborowie	‡	25	23
North Bundaleer	*	—	—
Northfield	*	—	—
Nunkeri and Yurgo	*	2	7
O'Loughlin	‡	19	24
Orroroo	166	—	—
Owen	A.M.	21	19
Parilla	A.M.	21	19
Parilla Well	A.M.	24	22
Parrakie	*	—	—
Paruna	*	—	—
Paskeville	180	21	19
Pata	*	—	—
Penola	A.M.	1	6
Petina	A.M.	29	27
Pinnaroo	185	28	26
Pompoota	190	12	10
Port Broughton	*	21	19
Port Elliot	202	16	17
Port Germein	*	1, 29	27
Pygery	A.M.	22	20
Ramco	185, 186	24	22
Rapid Bay	‡	1	6
Redhill	‡	25	23
Rendelsham	*	19	24
Renmark	*	20	25
Riverton	*	—	—
Riverton (Women's)	*	—	—
Roberts and Verran	182	20	25
Rockwood	199	24	22
Rosedale	*	—	—
Rosy Pine	*	—	—
Saddleworth	‡	—	—
Saddleworth (Women's)	170, 176	—	9
Salisbury	‡	4	2
Salt Creek	*	—	—
Sandalwood	*	—	—
Shoal Bay	*	25	23
Smoky Bay	‡	—	—
Spalding	*	—	—
Stockport	*	—	—
Streaky Bay	*	—	—
Strathalbyn	*	25	23
Talia	182	10	8
Tantanoola	*	22	20
Taplan	186	25	23
Tarcowie	‡	25	23
Tarlee	170	25	16
Tatiara	‡	15	20
Two Wells	*	—	—
Uraidla & Summertown	*	3	—
Veitch	*	—	—
Virginia	*	—	—
Waikerie	*	—	—
Wall	*	—	—
Wanbi	*	—	—
Warcowie	‡	—	—
Watervale	176	—	—
Weavers	‡	24	22
Wepowie	*	—	—
Whyte-Yarcowie	170	—	—
Wilkawatt	189	22	20
Williamstown (Women's)	173, 174	5	3
Williamstown	‡	21	19
Willowie	A.M.	19	24
Wilmington	166	19	24
Windsor	176	25	23
Winkie	190	24	22
Wirrabara	*	22	20
Wirrega	*	—	—
Wirrilla	175, 176	22	20
Wirrulla	A.M.	22	20
Wolowa	*	—	—
Wudinna	‡	22	20
Wynarka	*	—	—
Yabmana	*	—	—
Yacka	*	25	23
Yadnarie	182	18	23
Yallunda	‡	—	—
Yaninee	*	—	—
Yeelanna	‡	22	20
Yongala Vale	*	—	—
Yorketown	*	—	—
Younghusband	190	27	25

* No report received during the month of August. ‡ Held over until next month. † Formal.
A.M. Annual meeting.

THE AGRICULTURAL BUREAU OF SOUTH AUSTRALIA.

Every producer should be a member of the Agricultural Bureau. A postcard to the Department of Agriculture will bring information as to the name and address of the secretary of the nearest Branch

If the nearest Branch is too far from the reader's home, the opportunity occurs to form a new one. Write to the department for fuller particulars concerning the work of this institution.

REPORTS OF BUREAU MEETINGS.

UPPER-NORTH DISTRICT.

(PETERBOROUGH AND NORTHWARD.)

HOOKINA (Average annual rainfall, 12in.).
July 26th.—Present: 11 members and four visitors.

CARE AND MANAGEMENT OF HORSES.—The Hon. Secretary (Mr. A. J. Heneschke) read a paper from the *Journal of Agriculture*, and, in the discussion that followed, Mr. J. H. Westrop expressed the opinion that one man should only be expected to look after one team, so that he would have the opportunity of understanding the temperament of each horse in the team. Mr. H. V. Heneschke considered that the next 10 years would see the horse entirely replaced by the tractor for farm work. Mr. B. A. Murphy was not in favor of the tractor for that district, because the horses could be fed very cheaply, whereas the tractor required feeding every time it was worked. Mr. A. J. Heneschke stated that no farm could be worked without the assistance of horses, but where two teams were employed he thought the tractor could be worked with advantage.

WILMINGTON (Average annual rainfall, 18.36in.).
June 27th.

Mr. H. Duhring read a paper, "Workmen's Compensation Act and Insurance Policies," in which he expressed the opinion that every man should have an accident policy, which could be shown to the farmer before he hired any labor. Such a practice would protect the employer against accidents that happened to the workman whilst employed on the farm.

PLANTING AND FIRST PRUNING OF FRUIT TREES.—A further meeting was held on July 9th when a paper dealing with the above subject was contributed by Mr. E. L. Carlyon. The speaker favored planting the young tree in the natural orchard soil without previous preparation. After a good application of stable manure had been made to the orchard the land should be ploughed or turned over with a spade. At the commencement of the summer months a thick layer of stable manure should be placed around the butt of each tree to save as much water as possible. It was the speaker's contention that ordinary orchard soil, with a liberal application of manure, produced fruit of as good a quality as ground which received a costly preparation. Referring to the various methods of pruning that were practised, the speaker favored the plan of cutting back hard during the first season in order to be able to make a nucleus for the formation of a shapely tree. He believed that it was a mistake to allow the trees to bear fruit during the early years of their growth, because the young trees were not able to supply nourishment for the roots as well as for the fruit. Hard pruning and proper care during the first season or two would make a vigorous and healthy tree.

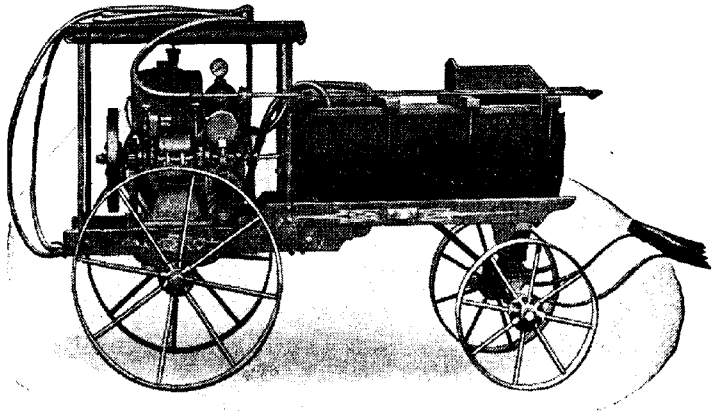
ORRORO, August 4th.—The delegates to the Morchard Conference gave a report of the proceedings of the various sessions, and several other matters of local importance were brought before the meeting for discussion.

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MIDDLE-NORTH DISTRICT.

(PETERBOROUGH TO FARRELL'S FLAT.)

BEETALOO VALLEY (Average annual rainfall, 23.50in.).

July 25th.

ROAD MAKING.—Mr. J. Richards, who read a paper dealing with this subject, said a new road should be made 56ft. wide, with a crown of 18in. and a gradual slope to both sides, in order to drain all the water off the road. A 16ft. wide metal bed should be made in the centre of the road, and given a cross fall of 4in. He considered that good hard stone or hard limestone made the best road. Six inches of metal, broken down to a 6in. gauge, should be placed in the bed of the road, and on top of that 6in. of 2½in. gauge should be added and made with a shoulder 3ft. in width. Blinding could be done with good rubble or sandy soil. Side cuttings should be 30ft. wide, to allow plenty of room for vehicles to pass one another. All the earth should be scooped in the centre of the road, and made with an 18in. crown and a cross fall of 6in. to drain the water to the sides. The road should be rolled, and a drain 2ft. wide and 1ft. deep made to carry the water from one spoon drain to another. Fords over creeks should be made 25ft. wide, and formed with an 18in. crown in the centre to drain the water to each side. Posts for the ford should be placed 4ft. in the ground, and bedded in concrete, the logs being fastened to the posts with strong bolts. After the posts had been set in position, the logs should be placed in the bed of the creek. The fall of the creek could be considerably raised by placing another row on top, and then filling up the bed of the creek with metal. Another row of logs could be placed 15ft below the first row, and if pitch paved between both rows of logs with large stones, a good water shed would be formed, and much would have been done to prevent large holes washing out below the logs.

MOUNT BRYAN (Average annual rainfall, 15.81in.).

July.—Present: six members and visitors.

TRACTOR *v.* HORSES.—Mr. J. L. Quinn, who read a short paper on this subject, expressed the opinion that the tractor could claim many advantages over the team of horses, the main items being that the tractor was able to dispense with the haystack, chaffcutter, engine, stables, harness, and other necessaries required in connection with a team. The tractor also enabled one man to crop 300 to 400 acres with very little assistance. Where the tractor was employed, time was saved in not having to feed a team of horses in the mornings, dinner hours, and evenings, and there was also the advantage of being able to work the implements at a regular pace. As an illustration he cited the case of a 15.27 horse-power tractor which was able to drill and cultivate 30 acres a day with a combined drill and cultivator, whereas 14 horses, working a 20-hoed drill and 17-tyned cultivator, could only cultivate 20 acres per day. He was of the opinion that 500 acres of land could be put under crop with the tractor for £35, but it would cost £80 to do the same work with a team of horses. The tractor also solved the problem of employing constant labor, and did away with the heaviest and most objectionable work on the farm, *i.e.*, hay carting and cutting. There were, however, two disadvantages against the tractor, first, that of working boggy and wet land, and secondly, the carting of the wheat. The first was a very difficult matter to overcome, but the second could be overcome by carting the wheat into a heap close to the road so that when reaping was finished, the grips on the wheels of the tractor could be changed and the machine used to draw the wheat into the station.

NELSHABY.

July 23rd.—Present: 11 members and visitors.

CARE OF FARM MACHINERY.—Mr. T. D. Haines, who read a short paper dealing with this subject, said farm machinery was so expensive that the farmer should take every reasonable care of it. When the harvester or binder had finished work in the field it should be immediately taken to the homestead and placed under cover. Prior to starting work in the paddocks, each machine should be over-

hauled, worn and broken parts replaced, and all oil holes and bearings cleaned out to take the oil. It was a good plan when there came a damp day during harvest, to go over the harvester, tighten all the bolts and nuts, and see that all parts were in proper working order. Special attention should be paid to the pinions. These should not be worked if inclined to slip, or they would spoil the crown. When all the crops had been reaped the harvester should be taken into the shed, and a prop placed under the off side of the comb to keep it level. In the discussion that followed members thought iron should be used on the roofs of buildings in which implements were housed, and that the wood work on all machines should be given an occasional coat of paint.

SHEEP AND WOOL.—Under this heading a paper was read by Mr. C. Plenty at a meeting held on June 2nd. The speaker held the opinion that no farm could be considered thoroughly up-to-date unless it supported a flock of sheep. When making a start with a flock of sheep, the farmer should select that breed which was best suited to the conditions in which he lived. When preparing the clip of a small flock for market, it was not advisable to make too many classes. He suggested the following classification:—All wethers above the age of hoggets, hoggets of both sexes, ewes, and finally lambs wool. The fleeces should be well skirted, care being taken not to over do that part of the work, unless the wool was very seedy or burry. If a fleece contained a "sandy back," that part should be removed and all bellies, clean or dirty, should be removed from the fleece wool. The wool should be classed more by the feel to the hands than by the sight of the eyes. If, at the first touch, the wool sorter was unable to classify a certain fleece, it should be placed back on the pile and a further examination made later on in the day. "Yolky" fleeces should not be included with first-class wool. All very dry fleeces should be examined for a break in the fibre of the wool. The first-class fleeces should be branded "A A wethers" or "ewes" as

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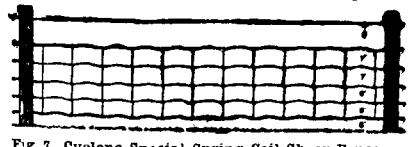


Fig. 7 Cyclone Special Spring Coil Sheep Fence.

The fence illustrated is the famous Cyclone Spring Coil Special Sheep Fence, 5 lines, 26 inches high, with barb wire 9 inches above top line wire, making complete fence 42 inches high, and serviceable for all stock.

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the case might be, in clean and distinct marks on the bales, and the bales should always be branded in the same manner, because the buyers remembered the brands and gave better value for the wool that they knew corresponded with the description given by the grower.

LAURA, July 28th.—Mr. J. F. Roenfeldt delivered an interesting and instructive address, "The care and Treatment of Harness." A good discussion followed and the speaker replied to a number of questions.

BOOLEROO CENTRE, July 27th.—Mr. Mills read a paper "Mixed Farming," and an interesting discussion followed. Several other items of local importance were also brought before the meeting for discussion.

WHYTE-YARCOWIE, June 9th.—Mr. G. McGregor read a paper, "The Divining Rod," and an interesting discussion followed. Matters in connection with the annual meeting were also brought before the meeting.

WHYTE-YARCOWIE, July 20th.—After the report of the work performed by the Branch had been presented by the Hon. Secretary (Mr. E. J. Pearce), and the officers elected for the ensuing year, the Wool Instructor of the School of Mines (Mr. A. H. Codrington) delivered an address, "Points in Connection with the Wool Industry."

LOWER-NORTH DISTRICT.

(ADELAIDE TO FARRELL'S FLAT.)

LYNDOCH (Average annual rainfall, 23.01in.).

July 13th.

PRUNING COMPETITIONS.—A very successful pruning competition was conducted under the auspices of the Lyndoch Branch of Agricultural Bureau at Messrs. Springbett Bros.' Hillside vineyards. The following are the results:—"Rod pruning," 11 contestants—Messrs. A. Linton, 81 points, 1st; W. Bishop, 78 points, 2nd; H. Taylor, 77 points, 3rd. "Spur pruning," 14 competitors—Messrs. L. Harper, 90 points, 1st; A. Linton, 88 points, 2nd; G. King, 86 points, 3rd. The South Australian Gas Company presented a Silver Cup known as the "The Sulphate of Ammonia Cup" for the highest aggregate points in rod and spur pruning, Mr. A. Linton being the winner with 169 points. The prize money was donated by the winemakers operating in the district. The judges were Mr. Geo. Quinn (Government Horticultural Instructor), and Messrs. L. N. Salter and C. M. Pollitt.

SADDLEWORTH (WOMEN'S) (Average annual rainfall, 19.69in.).

August 14th.—Present: eight members and 12 visitors.

Mrs. Wakeham, J.P., a foundation member of the Riverton Women's Branch of the Agricultural Bureau, attended the meeting and delivered an address, in which she detailed some of her experiences in the North Island of New Zealand, where she had recently spent a seven months' holiday.

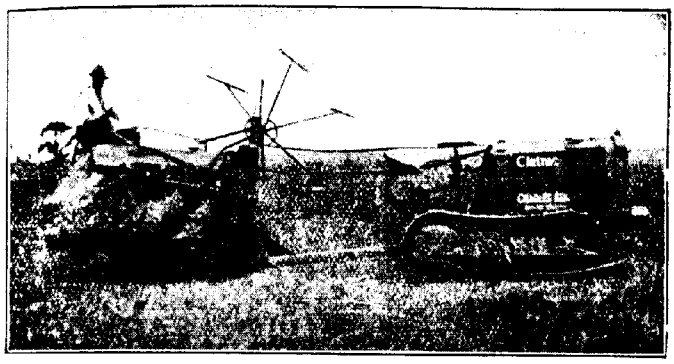
TARLEE.

May 1st.—Present: 18 members and three visitors.

CROP COMPETITIONS.—The following paper under the heading "Benefits to be Derived from Crop Competitions" was read by Mr. W. Clarke:—"To derive the most benefit from crop competitions it will be essential for the farmer, who has entered for the competition, to give full history of the growing of the crop, such as how and when the land was broken up for fallow, and how the land has been worked since it was broken up, when the crop was sown, and the quantity of both seed and manure used per acre, also the kind of wheat sown; and for this to be published, with the results of the competitions and the judge's observations and recommendations, so that the farmer, who has similar land and rainfall, can study those methods and compare them with his own. Until recently the majority of Australian farmers have given more attention to the pioneering

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problems in the development of the land than they have to the raising of the standard of farming methods. Especially is that so in the newly opened areas, and the success that has generally been achieved by this method has given impetus to the opening up and settling of new land. Here and there, however, will be found farmers who, through their own initiative, or through following the scientific lead of others, such as Agricultural Colleges or Government Experimental Farms, and adopting what is suitable to local conditions, have done amazingly well, and one of the methods of bringing these successful farmers and their methods under the notice of the farming community is through the medium of crop competitions. Of course, there are other ways of distributing this knowledge, such as through the rural press or the Agricultural Bureau, but the continual success in public competition of crops grown by certain methods will point to their advantage, and unless the farming community is too conservative and inclined to keep to the old customs, they would at once start to study those methods of cultivation, variety of seed, quantity of manure, and commence to apply those methods to the benefit of themselves and the State. It can readily be demonstrated that new facts can be discovered by the scientist and the best farmers more quickly than they can be disseminated, and one of the benefits of crop competitions will be to help spread these facts. In the Wimmera district in Victoria, crop and fallow competitions have been conducted for a number of years and they have not been content with that, but also have a competition for the best farm, which helps to promote a healthy rivalry, which must have a beneficial effect on the community in which it is conducted. At Nhill, one of the towns in the Wimmera district, they have had their twenty-first competition, and Mr. H. A. Mullett, B.Sc. (Agric.), the judge of the last season's competition, stated 'that in the percentage of farmers who have adopted practices fundamental for heavy crop production Nhill leads the way.' Following the lead given them by Nhill, 12 other Wimmera and mallee centres now hold similar competitions. These competitions have been conducted by the different Agricultural Societies, and the success of them can be best judged by the improvement of the crops grown in these districts. The Wimmera has a reputation for producing 40bush. crops over a large area. It should also be made clear that the average for the whole area is not 40bush., but the average yields for the counties in the Wimmera are far higher than the rest of Victoria. For instance, the county of Borung in the 1921-22 harvest, where 359,000 acres were sown to wheat, the average per acre was 28bush. The average for the whole of Victoria for that year was a little over 16bush. Many individual farmers in the Wimmera, however, have frequently obtained 40bush. and more per acre during recent years. For instance, the winner of the Rupanyup three years' crop competition, which comprised at least 100 acres annually for the years 1920, 1921, 1922, was Mr. R. J. Jackson, whose yields were—1920, 265 acres, averaging 43bush.; 1921, 265 acres, averaging 43bush.; and the 1922 crop of over 275 acres was estimated to have been nearly 40bush. This is only one instance of many and it is due to the improved methods of cultivation, for 10 years ago the black Wimmera soil was not regarded as being so productive as it is to-day. The Wimmera Agricultural Societies have gone much further than any others with crop competitions in bringing to light the best crops each year in the different districts and in giving publicity to the methods by which those crops have been raised. The result is that there are a greater proportion of men farming according to the best known methods in the Wimmera than in other wheat areas. But to show the true rate of progress in the Wimmera since the establishment of the Nhill crop competition 21 years ago, we will compare the average yield per acre before and after the period, taken in periods of five or six years; omitting 1902 and 1914, which were years of drought, when little or no wheat was harvested. In the period of 1897 to 1901 the area sown, 640,000 acres, averaged 7.6bush. per acre; 1903-1907, 624,000 acres averaged 12.4bush. per acre; 1908-1913, 617,000 acres averaged 14.8bush. per acre; 1915-1920, 680,000 acres averaged 19.1 bush. per acre—a net increase of 11.5bush. per acre. The period 1903 to 1907 was the period in which superphosphate and fallowing were introduced, but despite the fact that no other great discoveries have been made comparable with them since then, the advances have been just as great as before. It was a period of careful exploration of most of the factors involved in local wheat cultivation, and of the propagation of the discovered facts from experimental fields and

advanced farms to farmers at large, in which crop competitions played an important part. In the Northern district, which is the only other district in Victoria with an equal area and similar rainfall to the Wimmera, the net increase over the same period has been 3.4bush. The soils are somewhat different, but it cannot be argued that there is more good land under cultivation in the Wimmera soil than in the Northern district. During the same period there was no organised method of ascertaining the best local practice and giving publicity to it, and there is this to learn from Victoria, that although the same scientific discoveries were available to both, the Wimmera district, which has fostered crop competitions, has increased its yield far ahead of any of the other districts. With reference to our own State. Last year the Maitland Branch of the Agricultural Bureau held its first crop competition, and although there was no reference to the fallowing or the seeding operations for the farmer to compare with his own work, the judge, Mr. W. J. Spafford (Superintendent of Experimental Work) in his observations and recommendations stated that in connection with the competition extremely good wheat crops were seen, but much improvement could still be made by more attention to details, which was quite necessary if maximum crops were to be aimed at. In some of the crops entered for competition, as well as in many other crops in the district, quite a number of controllable weaknesses were in evidence, all of which did something towards reducing the returns secured from the land. Amongst the worst of these troubles were—Bunt or smut, take-all, and flag smut, the introduction of bad weeds, such as barley and drake with the seed, wheats grown which were badly mixed with other varieties, too little seed used where the weeds had not been killed when fallowing, insufficient fertiliser, and the presence of eelworms in the cereal crop. The majority of these weaknesses are spread over the wheat-growing area in the State, and Mr. Spafford not only mentioned them, but he also told how each one could be controlled, so that the Maitland competition should be a benefit to any farmer who has read Mr. Spafford's report and is suffering from some of those troubles. The Maitland district will benefit more than the rest of the State, for it will be brought home to them more through the competition being held there, that these things can be controlled, and also anyone wishing to enter in that competition in future will realise that they will have to control those weaknesses before doing so if they wish to win the competition. They also have the benefit in having a local crop competition, because it affords the opportunity of seeing the success of improved practices by direct personal illustrations, which are the greatest benefit of crop competitions." Mr. M. Clarke also read extracts from the *Agricultural Gazette* of New South Wales dealing with crop competitions in New South Wales. An interesting discussion followed the reading of the papers.

WILLIAMSTOWN (WOMEN'S).

June 6th.—Present: 22 members.

COOKING.—In the course of a paper under the heading "Inexperience in Cooking," Mrs. Woolford said it was surprising the number of women—both old and young—who were to all intents and purposes ignorant of the general rules of cooking. For such people the writer of the paper considered that a cooking recipe book would be a most welcome and necessary addition to the household library. Mrs. Woolford first referred to the cooking of meat, which, she said, should not be cooked hurriedly. It should be put in the oven in plenty of time for the meal, and after it had commenced to cook, the heat of the stove could be reduced so that the meat would cook slowly. The fire, of course, required attention to see that it was not allowed to burn down too low. Meat cooked slowly would be found to be more palatable and more tender than meat that was either boiled or roasted hurriedly. If meat was to be cooked, and it was inclined to be somewhat tough, it was a good plan, after it had finished cooking, to draw the saucepan or pot aside from the fire and allow the meat to remain in the liquid until it was nearly cold when it could be removed. Steak could be improved by cooking it over a fairly strong fire for the first few minutes. The strong fire caused a nice brown crust to form on both sides of the steak and prevented the juice of the meat from escaping, which improved the taste of the meat. If a little cold meat was on hand, a tasty dry hash could be made from the following recipe:—"Cut the meat into small pieces, cover it with water, season with salt and pepper, taking care to keep it well stirred. After being about one hour

to an hour and a half on the stove, potatoes and onions could be added, the stirring being continued. When the potatoes are cooked, take a prong and mash them well, then stir the whole together and leave it on a grate so that is will not burn. It can then be served with any other vegetables that have been boiled separately.'' Another way of using cold meat was to put the meat through a mincer and then into a pie dish, over which a crust of mashed potatoes should be made, and then cooked until the potatoes were nicely browned. An enjoyable dish—salmon pie—could be made in the same way, but, of course, there was no need to put the fish through the mincer. During the summer, cold meat bones kept from about Thursday until the end of the week could be placed in the boiler or saucepan, covered with water and then seasoned with plenty of salt and pepper. They should be allowed to boil for several hours, then taken off and strained first through the colander, and then through the gravy strainer. The liquid should be allowed to ''set'' all night, when the fat should be removed, and the result should be a most palatable jelly which could be eaten with cold meat instead of pickles, beetroot, &c. A peeled and cored apple cut into small pieces made an excellent flavoring for soup. The flavor of potatoes was considerably improved by adding a small quantity of sugar to the water in which they they were boiled. Carbonate of soda boiled with peas had a tendency to soften peas that were old and hard. Carbonate of soda also softened cabbage and gave it a nice flavor. To give the cabbage a nice color the lid of the cooking utensil should be removed whilst the cabbage was being boiled. Carrots and parsnips took some little time to cook properly, and for that reason they should be placed over the fire before other vegetables. All vegetables grown above ground, such as cabbages, cauliflowers, peas, beans, &c., should be placed in boiling water, while all root crops should be immersed in cold water and then boiled. A further meeting was held on July 4th, when several cooking recipes were discussed.

WILLIAMSTOWN (WOMEN'S).

August 1st.—Present: 18 members and visitors.

VEGETABLES AND HOW TO SERVE THEM.—Mrs. D. Coleman read the following paper:—''The important part which the consumption of vegetables plays in connection with our general health cannot be too highly estimated. Indeed, if we were more alive to this fact, many illnesses could be avoided. Onions are amongst the most healthful vegetables and should be consumed a great deal more than is the custom. All root vegetables may be kept fresh for a considerable length of time by planting and covering them with fresh moist earth. Beans and vegetables of a similar character can be kept nice and firm by placing them in a wet bag and throwing another wet bag over the inner one. On no account should the bag be allowed to become dry. Celery is one of the best foods with which we are endowed, and we cannot do better than eat of it in plenty. Beans and peas are very nourishing. Green peas are more digestible, but less nourishing than dried or full grown peas. These need to be thoroughly boiled to make them digestible. If a pinch of carbonate of soda is added to the water in which all green vegetables are boiled, it will preserve the natural color and give the cooked vegetable a more attractive appearance than when this simple expedient is neglected. When peas are old, a dessertspoonful of sugar added to the water softens the skin and improves the flavor. Potatoes form our staple vegetable, and no doubt much of their popularity is due to the fact that they are cheap. Potatoes are not a flesh-forming food, and when depended upon to provide the chief item of diet, milk or butter must be added to make them nourishing. Salad vegetables, such as lettuce, lentils, &c., do not contain flesh-forming constituents, but are invaluable on account of their bulk and saline properties. This is unfortunately removed from most vegetables during the process of preparation. Therefore, the use of these raw vegetables in hot weather should be as liberal as possible. To prepare for cooking—Old potatoes—Scrub and dry, peel very finely and take out the eyes, drop into clean, cold water and soak for a couple of hours before cooking. New potatoes—Scrub with a coarse brush and scrape well. This should be done just before cooking. Cabbage—Cut the outside leaves off and remove the stalk and coarser part of the leaf stalk. Soak for half an hour in a large quantity of salted water. Cauliflower—Take off the outside leaves, shorten the stalk to the base of the young leaves, and soak in salted water to extract any insects. Marrow—Peel very thinly and remove the core and seeds, cut in pieces about 4in. square, and

wash. Spinach—Strip the leaves from the stalk and wash well in several waters to remove all trace of grit. Asparagus—Scrape the stalks, from the head down, with a sharp knife, and wash well. Bind in bunches, making the heads even, then with a sharp knife make a straight cut across the other end of the bunch. Carrots.—Scrape thoroughly from the thick end and peel, after boiling, by rubbing in a coarse cloth. Turnips—Peel sufficiently thickly to remove woody fibre (if any) from skin. Onions—Remove the outside dry skins and drop the onions into cold water to preserve color, and then allow them to stand in boiling water, into which half a teaspoonful of baking soda has been added. All vegetables (except spinach and old potatoes), should be placed in plenty of water. Ample salt should be added to the water in which they are cooked. One teaspoonful to every quart of water is the usual proportion. Green vegetables should be put into boiling water, with a pinch of carbonate of soda, and be boiled rapidly with the lid off the saucepan to preserve the color. Root vegetables should be put into boiling water and boiled slowly with the lid on the saucepan. The exception to this latter rule is old potatoes, which are placed into cold water. Peas should have sugar as well as soda added to the water in which they are boiled. A little mint should also be boiled with them."

WIRRILLA.

June 23rd.—Present: six members.

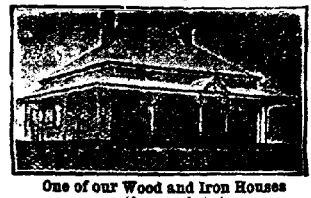
CARE OF FARM HORSES.—Mr. S. Schunke, who read a short paper dealing with this subject, said the first essential point in the care of the farm team was the erection of a warm stable. The building should face in either a northerly or easterly direction and be provided with a good solid floor. Ample provision should be made for supplies of good fodder. With the exception of the busy seasons of the year—harvesting and seeding—the team should not be worked more than eight hours each day. Before the team was harnessed in the morning each animal should be groomed with the curry comb, and care taken to see that the mane was not left under the collar. It frequently happened that 10 horses were available to work an 8-horse implement, and, in such cases, it was advisable to work all the horses and so lighten the work for the team rather than allow two horses to remain idle. If possible a small paddock should be left out for grass, in which the horses could be grazed during the spring months of the year. That would give the animals a complete spell, and give them an opportunity of putting on condition, thereby reducing the tendency to contract sore shoulders.

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BLYTH, August 4th.—In order to awaken and stimulate interest in the local Branch of the Bureau, the programme committee decided:—(1) "That competitions be held for the best samples of wheat taken from farmers' seed wheat stacks on or about April 1st, and that not less than three varieties of wheat be entered by each competitor." (2) "That a prize be awarded at the Blyth Agricultural Show for the best collection of farm produce produced on the farm by an exhibitor, who must be a member of the local Branch of the Bureau." (3) "That a prize be awarded for the paper considered to be the most instructive and beneficial to members of the Branch."

SADDLEWORTH (Women's), July 10th.—The meeting was devoted to a discussion on the subject, "Home Recipes." A number of recipes were given, and samples of scones, cockles, brown biscuits, brown bread, and sweet marmalade were exhibited. Other matters of local interest were also brought before the meeting.

WATERVALE, July 30th.—The subject "Cotton Growing" was again brought before the meeting for discussion, and Mr. N. Reid and several other members stated that it was their intention to carry out a series of experiments during the coming season.

WINDSOR, July 25th.—The Field Officer of the Department of Agriculture (Mr. S. B. Opie) attended the meeting and read a paper, "Tillage Operations." A keen discussion followed, and a number of questions were answered by the speaker.

WIRRILLA, July 28th.—Mr. D. Garrett, sen., read an interesting paper, "How to Obtain the Best Results from the Farm." The report of the work performed by the Branch during the past year was presented by the Hon. Secretary (Mr. H. Schunke), and the officers were elected for the forthcoming session.

YORKE PENINSULA DISTRICT.

(TO BUTE.)

KILKERRAN.

July 24th.—Present: eight members and six visitors.

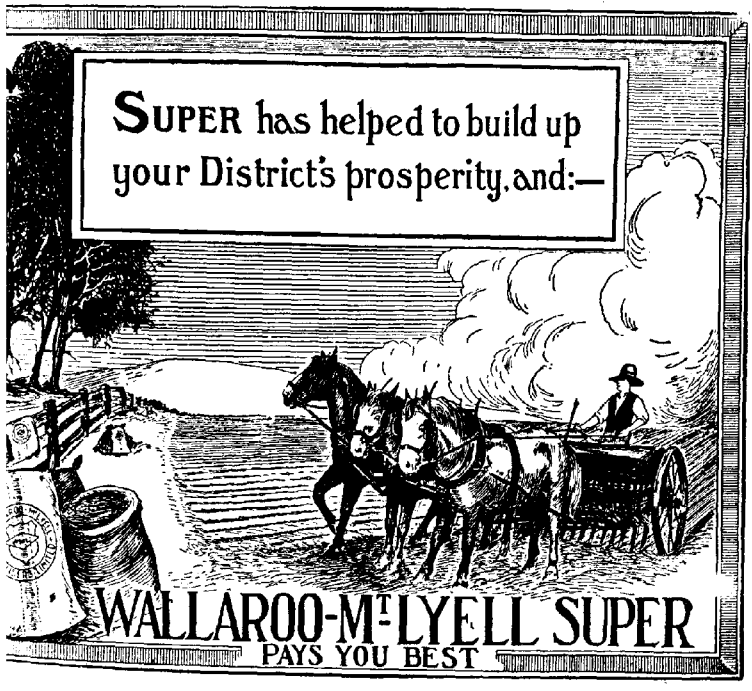
THE COMBINE *v.* DRILL AND CULTIVATOR.—Mr. S. T. Keightly, who read a paper dealing with this subject, first stated that something could be said in favor of both the combine and the drill and cultivator as means for putting in the crop. The combine no doubt effected a saving of labor, but he did not think a great deal of time was saved with that implement. Providing the farmer had sufficient strength to work the cultivator and drill and the necessary labor, he would cover more ground in less time with the two implements than with the combine. His experience had been that the combine was not a successful implement in land that was at all stumpy. The "set" of the shares prevented the bodies from releasing easily, consequently there was more strain on the tynes than there was on the ordinary spring tyned cultivator. For the farmer with a small holding and suitable land, there was no doubt that the combine was a most useful implement. But for the farmer who worked on a larger scale, and who employed labor, the cultivator and drill would be the better means of enabling him to get in his crop in the shortest possible time. The question as to which was the better implement to use was one which depended very largely on the class of land that had to be worked, and the availability of labor.

SHEEP ON THE FARM.—In the course of a paper under the title, "The Best Breed of Sheep for the Farm," Mr. C. F. G. Heinrich said the question was one that was very largely governed by climatic and soil conditions. The Merino produced the best wool and was specially suited for inland country, but for coastal and barren country the crossbred sheep was to be preferred. The crossbred also produced a better export carcase, was more hardy and less sensitive than the Merino, and was for these reasons one of the most profitable types of

sheep for the farmer who grazed a small flock. The Lincoln ram, crossed with a selected Merino ewe, produced a lamb from which a good fleece of wool could be expected. The mating of the first cross from a Merino ewe and a Lincoln ram, the second crossbred ewe to a Lincoln ram, and the third cross ewe to a Merino, produced a "Come-back," which was an excellent sheep, both for wool and mutton. The best cross for lambs for market was the Merino ewe crossed with either a Dorset Horn, Border Leicester, or Shropshire ram. In conclusion, the speaker expressed the opinion that the Merino sheep could not be surpassed in quality and weight of wool when grazed on inland country, but the Merino could not be recommended for coastal and barren country.

MOONTA (Average annual rainfall, 15.22in.).
July 28th.—Present: 18 members.

FALLOWING.—Mr. D. Kitto contributed the following paper on this subject:—"This subject is very important as far as Australian dry farming is concerned. This is realised by practically all our farming communities, as it can be seen by looking around that, although the area under wheat, &c., has slowly annually increased, the proportion of fallow under crop has greatly increased. Every farmer knows that to get the best from his land he must treat the land so as to secure the maximum amount of produce therefrom, and yet yearly maintain its fertility or yielding capacity. Since science has interested itself so much in



agriculture, the farmer nowadays has not so much need to use up his time and substance in slowly experimenting if he will but be guided by a little theory, which is obtained from other people's practical experience carefully recorded. The dictionary meaning of fallow is 'land ploughed and left unsown or rested.' It may not be properly understood that in most of our soils there is plenty of plant food in an unavailable state to the plants. This food is continually but slowly becoming available through chemical and physical actions, but not as fast, say, as a crop of wheat could use it. We fallow the land or plough it and let it rest for a while, in order that available plant food may accumulate for the next crop. By this means we get one good crop every two years, which is cheaper than one crop every year. Being satisfied, then, that there is plenty of unavailable plant food in the soil, we must consider how to work the land in order to help the various organisms and agencies at work on the raw material. If we consider the very minute root hairs on the roots of plants, through which most of the nourishment is obtained, we must clearly see that, although the soil be well stocked with food, if there be no solvent for it, the plant must die. Water is this solvent, and so the conservation of water in the soil becomes, perhaps, the main argument for fallowing in Australian dry farmed areas. I might just mention that the plant food is dissolved in the water and forced up into the plant by osmotic pressure. The surplus moisture is evaporated through the leaves and the food is retained. We know that very few plants can thrive or even live in a cold, water-logged soil owing to the lack of air, freedom for roots, &c. However, we are not much troubled with this condition on Yorke Peninsula, our concern being generally to get enough moisture. Land may be firstly prepared for fallowing by the use of sheep or a fire. Sheep are to be preferred, because practically all the plant foods they consume are returned again into the soil, thereby keeping up the strength of the soil, as well as growing a little wool and mutton. However, for the sake of doing a good job at fallowing time, it may pay to burn and clean the land to be fallowed during the previous summer—a common practice. It is reckoned by some that a good, clean burn is worth an extra bag of wheat or other cereal on the crop, more particularly when stubble is to be recropped. Of course, if land was always bare fallowed, cropped, and the stubble burnt, the supply of organic matter must eventually, if not soon, give out, and as a result practically no nitrogen would become available and nothing would grow. So it pays well to pasture the land occasionally or plough in the stubble or grass properly. Ploughing should be commenced as early as possible, which can generally be straight on from seeding operations. Seeding rains usually leave land in a good condition for fallowing, whereas a little later it frequently becomes boggy and then hard again, and fallowing can only be got on with very slowly. There is a great advantage in having as much land as possible ploughed before the heavy winter rains, because these help greatly in packing down the subsoil after it has been ploughed. The ploughing should be left in a rather rough state throughout the winter, because it allows the rain to soak in freely when it falls and not run and make the low patches boggy. The depth of ploughing must vary considerably with the conditions obtaining. Light, sandy land is usually worked shallow and heavy land deeper. It has been found by experiments that in land of a fair depth of soil about 3½in. has given the best results, although the tendency now with local farmers is to work even heavy land very shallow and often. Of course, deep ploughing in shallow soils gives a great setback by bringing up too much of the sour subsoil. I think it of advantage to just touch this raw material with the plough very rarely. The depth should also vary a little from time to time, especially in heavy land, because a sort of pan tends to form at the usual depth of ploughing, which must hinder good drainage; so by varying the depth of fallow we lessen this danger. The mouldboard fallowing plough still seems to be popular, but there are a few points in favor of the big disc fallowing plough. It may require more pulling, but it can deal more effectively with any rubbish, stones, stumps, &c., and tears the furrow slice away rather than cuts it as does the share and mouldboard. It will also more effectively deal with harder ground. As spring approaches the weeds commence to germinate and remind us that more working is required. These weeds must be killed as quickly as possible, because they at once draw food and moisture from the soil. Here again sheep come in very useful, because they will hold the weeds in check, while the land is quickly worked back. Sheep also greatly improve conditions by packing the subsoil further down. Whilst

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working the land to kill the weeds, we are also aerating the soil, conserving moisture, and assisting the agencies at work on plant foods. The depth of this cultivation should be shallower than the fallow, and leave the surface more level and finer, because heavy rains would now be over. The light mouldboard twin cultivator is very popular for this second main working, because it is a sure weed killer and may cover up any hard patches missed in the fallowing. As the weather becomes warmer, more attention must be paid to the condition of the surface of the fallow, otherwise evaporation will take place rapidly. It may be as well at this juncture to make mention of the movements of soil water as affected mainly by evaporation. Under natural conditions soils do not long continue in a wet state. Much water drains away, principally due to gravitation, but some is soaked up by the soil particles themselves, and some is held in a film form around each particle. This latter film moisture is that from which the plant draws its supplies. The retention of this moisture in the film form is due to surface tension, which causes suspended liquid to shrink to the shape of a sphere and exert a pressure towards the centre. For example, a small drop of water or any liquid will take the form of a sphere in the air or on a very smooth surface. When the rain falls each soil particle becomes covered with a film, which forms an elastic envelope. The smaller the quantity the thinner the film, the tighter it clings and the greater the pressure towards the centre. As rain continues this film becomes thicker, the tension less, and some of the water lodges into the pore space, and so drains away until a state of equilibrium is reached—the tension or pull of the film balancing the pull of gravity. If any moisture is used up in any region by root hairs or evaporation the tension is then increased, and so water is drawn from around and kept evenly distributed as long as possible. As this movement takes place most readily in a firm, damp soil, because of closeness of the particles, the films are unbroken and so are just like one continuous network of films; the reverse takes place in a loose, open, dry soil, and this is the secret of keeping the moisture down in the soil and is how the surface of the fallow should be kept throughout the warm weather. When it rains this fine, loose surface at once becomes set again and ideal for evaporation, and so the harrows or some light implement, such as a spring tooth cultivator, should be run over the soil quickly as soon as the land permits working, in order again to loosen up the surface and restore the mulch. The deeper the mulch the more effective will it be. If we have a deep mulch formed and receive a shower of rain it may probably not be enough to soak through the mulch and soon is dried up again. Hence one reason for shallow mulches. Another important reason is the fact that wheat requires a firm seed bed, and so we must not loosen it too deeply, else rolling would have to be done at seeding time. As seeding time comes around again the farmer can have a large area ready to be quickly, easily, and properly drilled in with cultivator and drill, or the combined implement, as he chooses, and before long the crops will show and repay those who have given their fallows a fair go." During the discussion which followed Mr. J. Atkinson said that different soils required different treatment. On a sandy country they could not fallow at all on account of drift, and drift had been caused by some ground being worked to a fine tilth. Mr. P. Ford did not favor the disc plough. Mr. E. C. Atkinson thought the disc plough was a very fine implement for fallowing purposes, because it always made a good seedbed. Different soils required fallowing at different times. He thought farmers should know when the different soils should be fallowed. Mr. A. B. Ferguson said he had great faith in scientific farming. They did not fallow to conserve moisture only, but also to kill the weeds. He preferred shallow working, and would work the ground with a light cultivator. Fallowing was the most essential operation for the production of good crops.

ARTHURTON, July 26th.—Mr. C. Z. Williams read a paper from the *Journal of Agriculture*, "The Use of Electricity on the Farm," and all present took part in the discussion which followed. The delegates to the half-yearly meeting of the Northern Yorke Peninsula Field Trial Society were also appointed.

PASKEVILLE, July 24th.—Mr. T. R. Brinkworth read a paper, "The Pooling of Wheat." The paper was freely discussed, and the speaker was called upon to answer numerous questions. The officers for the year ending July, 1924, were then elected.

WESTERN DISTRICT.

CARROW.

July 26th.—Present: 18 members.

HORSE v. TRACTOR.—Mr. H. Byrne, in opening a discussion on this subject, said the climatic conditions in Australia were particularly suitable for working tractors. Where a tractor was employed the farmer was able to dispense with the majority of the horses on the holding, and a stationary engine would not be required. Where a farmer put 250 acres under crop with a team of horses, he would be able to drill in 500 acres with the aid of a tractor. The tractor also relieved the farmer of such work as extensive preparation for water conservation, storing of fodder, and the cleaning out of stable yards. Ploughing, cultivating, and drilling could be performed more speedily with the tractor than with the horse team. He expressed a preference for the wheeled tractor rather than the caterpillar. Mr. A. Freeman said the farming and general purpose tractor, with its ability to perform a large amount of work in a short time, would be a valuable acquisition to a man who was working a farm single handed, for it could not be denied that the tractor required less attention than a large team of horses. Mr. Beare said horses were more handy, more durable, and more easily understood than the tractor. Messrs. Harrowfield, Burt, and G. Puckridge also spoke in favor of the horse. A show of hands being called for indicated that the majority of members present favored the horse.

COORABIE (Average annual rainfall, 11in. to 12in.).

Present: nine members and visitors.

At the May meeting of the above Branch the Hon. Secretary (Mr. H. V. Hobbs) read an extract from the *Journal of Agriculture*, "Some Observations on Varieties of Oats and their Cultivation in South Australia." The opinion was voiced that oat growing in that district would become more popular when varieties other than Algerian and Mortgage Lifter were introduced into the Coorabie locality. Satisfaction was expressed that new varieties, including Scotch Grey, Early Burt, and Kherson had been introduced into the district by members of the Bureau, with the idea of ascertaining their suitability to the conditions of the district.

DARKE'S PEAK.

June 27th.—Present: six members and visitors.

FALLOWING.—In the course of a paper dealing with this subject, Mr. C. Kobelt said as the main objects of fallowing were to kill the weeds and store moisture in the soil for the following crop, the work should be commenced immediately after seeding. Three inches was sufficiently deep to work heavy soils, but the farmer had to use his judgment when working sandy land. Stumps and stones should be picked off the land at the completion of fallowing and the harrows then worked crossways to the ploughing. After the weeds had germinated the culti-

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vator, should be brought into use, and after each fall of rain the land should be lightly worked with a cultivator. The heavy soils should be worked down to a fine tilth, but the sandy soil should be left in a rough condition to prevent drift. Mr. D. Kobelt thought the plough should be worked at a greater depth than 3in. in order to cover the mustard plants and to pull more stumps out of the land.

ROBERTS AND VERRAN.

July 26th.—Present: seven members.

SCRUB ROLLING.—Mr. H. Smith, who contributed a short paper dealing with this subject, stated that the best time for rolling the scrub was during the months of September and October, because, as a rule, very little rain fell before the time arrived for burning. Another advantage of rolling the scrub before harvest was that it gave the shoots time to start growing, and the subsequent burn killed a large number of the stumps. He preferred the log to the roller for pulling down the scrub, because the latter was too rough on the shoulders of the horses. In the discussion that followed, Mr. H. Simmons preferred rolling in September, because that gave the horses a longer spell before harvest than was the case if it was left until later in the season. He did not favor rolling the scrub after harvest, because the shoots did not get a sufficient check. He preferred the roller to the log. Mr. C. Masters said scrub should be rolled before harvest, because that allowed the shoots to make a start, and the fire burning them then gave them more of a check. In dealing with shooty scrub he favored a roller with a log attached behind, but in larger scrub he preferred the roller alone, because the log was inclined to drag the scrub into heaps, which spoilt it for burning. Mr. G. Smith thought the heavier the roller used the better, because a heavy roller did not leave so many snags as a light one. He preferred a log for dealing with burnt scrub. Mr. C. Simmons favored rolling early. In fairly heavy timber he preferred a log with a top rail, because it did a better job than a roller, and very often pulled the stump out with the tree. Mr. B. Evans favored a heavy roller. He thought the earlier the scrub was rolled the better. Cutting the spring-backs ensured a better burn. Mr. M. Masters preferred rolling scrub before harvest, because it caused a greater check to the shoots, but he did not think fallowing should be neglected to enable the scrub to be rolled. He favored a heavy roller. A log was the best for dealing with shoots and where it was not possible to secure a running fire.

TALIA.

July 14th.—Present: 10 members and visitors.

FUMIGATING RABBITS.—In the course of a short paper dealing with this subject Mr. M. Boylan expressed the opinion that rabbits were the worst pest that farmers had to deal with in that district, and for that reason he considered it the duty of every landholder to use every effort to keep the pest in check. He had used strychnine baits, the poison cart, and the fumigator, and he was convinced that the last mentioned was the most effective means of dealing with the rabbits. He held the opinion that two fumigations to every set of burrows were sufficient to destroy all the rabbits, whereas the poison cart would only destroy a certain percentage at special periods of the year, neither could the poison cart be used in very stony country. The fumigator could be comfortably worked by two men, one man pumping the fumes into the warren whilst the other filled in the holes from which the gas was escaping. Care should be taken that every hole leading into the warren was treated. It was a good plan to hunt all the rabbits into the burrows before using the fumigator, or those that were left outside would open the holes, and so reduce the effect of the gas.

YADNARIE (Average annual rainfall, 14.09in.).

July 24th.—Present: 10 members and visitors.

FALLOWING.—Mr. H. Weiss, who read a short paper dealing with this subject, said fallowing was one of the most important operations in connection with the working of the farm, and the job should be started immediately after the completion of seeding. For their district he favored working the plough at a depth of 2in. to 2½in. on sandy soil, but the heavy land could be worked to a depth of

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from 3in. to 4in. The plough should be correctly adjusted in order that good work would be performed and to lighten the strain on the horses. Sandy land should be worked when it was wet, so that it would be left in a rough condition to reduce the danger of drift to a minimum. A cultivator was the best implement for working clean fallow, but where a heavy growth of weeds had to be turned under, he thought a twin plough should be used. The fallow should be worked during September, so that as many stumps as possible would be pulled out. Before the commencement of harvest, all stumps and bushes should be carted off the land. If summer rains fell the fallow should be cultivated, but he did not think it advisable to use harrows because they had a tendency to make the surface soil too fine, which would probably result in drift. Mr. O. Forbes, who opened the discussion, referred to the good work that a flock of sheep performed on the fallow land. Where new land was being brought under the plough, two crops of wheat should be grown in succession, the land then fallowed to a shallow depth with a cultivator, sown with wheat, and then one crop of oats. He favored a spring draught plough, but care should be taken to adjust the implement so that each furrow worked at the same depth and turned over the same width of land. The farmer should study the nature of the soil that was being cultivated and work the plough accordingly. Mr. A. Sprigg and Mr. A. Jericho both thought that new land should not be ploughed too deeply. The depth of ploughing could be increased as the land received subsequent cultivations.

CUNGENA, July 28th.—The inaugural meeting of the above Branch was held in the local hall. Fifteen members and 16 visitors attended the meeting. Included amongst the latter was the Manager of the Minnipa Experimental Farm (Mr. R. Hill), who delivered a short address, "The Work of the Agricultural Bureau." Mr. Hill also read a paper, "The Wheat Plant from Germination to Maturity," and an interesting discussion followed.

EDILLILIE, June 12th.—All members were present to listen to an address, "The Wool Industry," which was given by the Wool Instructor of the School of Mines (Mr. A. H. Codrington). On the occasion of the annual meeting, which was held on July 28th, the Hon. Secretary (Mr. J. F. Carter) presented the annual report, and the officers were elected for the ensuing year.

KOPPIO, July 23rd.—The Hon. Secretary (Mr. T. R. Gardner) read an article, "Breeding Merino Sheep," which aroused a keen discussion. The matter of the increase in the freight and fares between Port Adelaide and West Coast ports was also brought before the meeting. The delegates to the Annual Congress were appointed, and the officers were elected for the ensuing year.

LIPSON, July 28th.—Mr. W. Brown read an article, "The Tractor *v.* Horses," and a keen discussion followed. Mr. S. Swaffer contributed a paper, "Fallowing," and all members present took part in the interesting discussion which followed. A paper dealing with the subject "Can Country Life be Made More Attractive?" was read by Mr. E. J. Barraud. The Hon. Secretary (Mr. W. R. Blacker) also read a short paper, "Alternate Cropping."

McLACHLAN, August 4th.—Matters in connection with the forthcoming Conference of Eyre Peninsula Branches, to be held at the Government Experimental Farm at Minnipa on September 27th and 28th, were brought before the meeting. Several other items were also introduced, and an interesting discussion ensued.

MILTALIE, July 28th.—An interesting paper dealing with the subject "Progress of Agricultural Machinery and Implements" was read by Mr. D. P. Bagnell, and a keen discussion followed. The annual report of the work performed by the Branch during the past year was presented by the Hon. Secretary (Mr. W. G. Smith), and the officers were elected for the current year.

EASTERN DISTRICT.

(EAST OF MOUNT LOFTY RANGES.)

MONARTO SOUTH (Average annual rainfall, 14in. to 15in.).

July 28th.—Present: 17 members.

TRACTOR *v.* HORSES.—The Hon. Secretary (Mr. C. F. Altmann) read the following paper:—"To ascertain the cost of ploughing with a tractor, compared to horses, I have taken a paddock of 74 acres, which I have just finished fallowing. To do this job took me actually 7¼ days, averaging 10½ acres per day. Costs:—96galls. kerosine, £7 11s.; oil, 5galls., £1 11s.; petrol, 1gall., 2s. 5d.; grease, 8lbs., 6s. 8d.; total, £9 11s. 1d. Loss of time through other work and weather, 3½ days. To plough the same paddock with horses, using the same implement and an 8-horseteam, which could not do more than 6 acres a day, because the soil is very heavy and far above the average of this district, would mean 12 actual working days, in addition to loss of time, which I will put down as the same as with the tractor. My calculations are:—Feed, 2½ weeks at 1 ton of chaff per week at the present price of about £4 10s. per ton, would be £11 5s.; wages, for a man for 4½ days at 10s. per day, £2 5s.; total, £13 10s.—showing £3 18s. 11d. in favor of the tractor. This is for fallowing where no loss is incurred through delay.

PINNAROO (Average annual rainfall, 16.74in.).

July 26th.—Present: six members and visitors.

MANAGEMENT OF SHEEP ON THE FARM.—Mr. M. S. Davis read a paper dealing with this subject, and in the course of the discussion that followed Mr. P. J. Edwards considered that a practical demonstration in woolclassing was far preferable to a lecture or whatever one might gain from the reading of books. He did not advocate leaving too much "tail" on lambs as a preventive against the blowfly pest at a later date. Mr. H. J. Fewings did not favor making too many classes of wool in the classing of the clip. Mr. J. Scales did not favor allowing the sheep to roam over the fallow when going to feed and water, so that the fallow would not be made too fine, and then be more liable to drift. Mr. P. H. Jones favored placing the rams with the flock about October, so that the ewes would lamb in warm weather, and have the benefit of early green feed.

RAMCO.

May 28th.—Present: 15 members and visitors.

Mr. J. Jemieson read a paper, "Companies," and an interesting discussion followed. Mr. F. Lewis introduced the matter of holding homestead meetings and said at the ordinary meetings of the Branch members discussed various subjects in connection with the management of the orchard, but if a meeting was held at the homestead of one of the members, the visitors would have the opportunity of

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inspecting the horticultural practices that were adopted. The best time to thought to hold such a meeting would be during October or November, because at that time the crops had "set" and would show the results of the blocker's work. Mr. O. B. Boehm was of the opinion that it would be better to hold a meeting of inspection after the pruning had been completed. After several other members had supported the suggestion, it was decided that the Branch should hold a homestead meeting during November. Members also discussed the question of top dressing lucerne plots and the grafting of sultanas on to Gordo stocks.

RAMCO.

July 23rd.—Present: 10 members and visitors.

ORCHARD WORK.—Under the title "Hints for the Year's Work on the Block" Mr. C. Boehm said he commenced pruning immediately the leaves had fallen. Peaches and nectarines were generally the first to shed their leaves, and, as a rule, he had some of those trees pruned during May. He considered pruning to be one of the most important jobs on the horticultural block. The next work was raking out the cuttings, which he usually performed with a mallee stick or rail about 8ft. or 9ft. in length, to which a double wire was attached 3ft. from one end. The short end of the stick should have a bevel on the lower side to prevent it from digging into the ground. Next the land was ploughed—off or away from the rows—the last round or two being done with the horse hoe. After four to six weeks had elapsed he again worked the hoe to cover the roots of the trees thoroughly, finishing up with the furrow in the centre between the rows. After the completion of that work time could be devoted to odd jobs about the block, carting firewood, repairs to the drying plant, and the making of new picking buckets. When drying was completed all the trays should be washed, and any broken ones should be repaired and stacked. The trays could be washed by spreading them out on the racks and allowing the rain to do the work, but when 3ft. by 2ft. were used it was a good plan to use the dip, into which 20galls. of water and 1lb. of caustic soda had been placed. The solution should be boiled and the trays immersed, first one end and then the other. The speaker always made a practice of rolling up the hessians directly they were cleared of dried fruit, and when the "sweats" had been emptied, a few of the best could be picked out and the hessians stacked away in a place safe from the attacks of mice. The buckets should also be dipped at the end of the season and placed on the rack upside down, where they would be found in a clean condition for the next season's work. Mr. G. Lewis mentioned that he had successfully raked out the cuttings from between the rows with a set of harrows. Mr. J. Boehm considered that the later pruning of peaches ensured a better crop for the ensuing season. Mr. W. Green thought it best to stack the trays, but not to wash them before the commencement of the new season.

TAPLAN.

July 12th.—Present: nine members.

BREAKING IN AND CARE OF YOUNG DRAUGHT HORSES.—The following paper was read by Mr. D. Chancellor:—"When the farmer intends to break in a young horse he should provide a good, strong yard in which to catch the animal. The posts, which must be at least 3ft. in the ground and 6ft. above it, must consist, if the yard is to be a strong one, of stout and solid material. Strong rails should be bolted to the posts about 18in. apart, and in the middle of the yard an equally strong post should be fixed some considerable depth in the ground for tying up the horse. Care should be taken that the rail is free from protruding, and consequently, dangerous spikes; also that the end of the rails protrude outside the yard; and if the rails are fastened by wire instead of bolts, particular care must be taken to keep the ends of the wire outside the yard. If these matters are not attended to, they may result in serious consequences to a young horse frightened during the breaking-in process. In order that the horse may not be tempted to jump the enclosure, the rails should be continued to the top of the posts. It is also important to keep the structure of the yard free from barb wire, because it is a danger to the horse and an inconvenience to the man. Various methods of catching a young horse are in use. A very good method is

the crush pen, where the horse is brought into such a position as to enable a person to get around it and handle it with safety. Some people believe in using the whip to make a young horse come up or turn its head towards them to enable them to catch it. Personally I condemn this method, being of the opinion that the less a person uses the whip the more the horse realises that one does not wish to hurt it. The whip is sure to frighten it, therefore making it hard to catch. My idea is to have a long stick, a stout, fair length of rope with a ring at one end. Make a sling in the rope and put the ring on the end of the rope and approach the horse, bearing in mind that the horse is young and timid and does not know what you are going to do with it. Let the stick and sling rest on the animal's back for a little while and speak to the horse, gradually working down until the ears are reached; then gently rub the stick backwards and forwards and gradually work down until the rope is in a suitable position. Then take the stick away, taking care to put it where it will not hinder the feet of the person breaking in the horse. It is a good plan to give the horse a name at the beginning of handling and stick to the name, then the horse will soon know it. Once the rope is on the horse approach the animal and rub it about the head, ears, and between the eyes. If, however, after a few tries the horse will not allow this to be done, put the rope around the post and make the horse go towards the post, taking up the slack rope at the same time. In all probability the horse will hang back. If it does, let it have a good pull, it will do it good. Should it choke, slacken the rope immediately and the horse will soon give up hanging back. Take a pair of winkers, undo the bit, try and put the winkers on in the ordinary way. If, however, the horse will not allow this to be done slip them over the ears. Care should be taken to see that the winkers are thoroughly oiled beforehand, so as to make them pliable, as the winkers will have to be adjusted to fit the horse when they are on, and one should not be troubled with stiff leather, buckles, or keepers. When the winkers are on the horse, a rope should be put on the bit ring; then take the rope off the neck. The horse should be made to run around the yard; a good tension should be kept on the rope. Should, however, the horse be too hard to hold, then undo the rope off the bit ring and run it through the ring under the jaws and fasten to the other side bit ring. This will enable one to hold the animal with ease. When you think the horse has had enough of that side put the rope on the other bit ring and give the horse a run around on that side. For draught horses I do not think very much mouthing is required—leading is more essential than mouthing. One man should lead the colt while another is behind helping it along. Care should be taken not to jerk the horse's mouth or hit it about the head, because such abuse is not easily forgotten by the animal. Take a collar and see that it is a perfect fit for the horse—for preference, a leather-lined pipe collar. Soak the collar over night in water, then put it on the horse while wet and it will be pulled into the shape of the horse's shoulders. Also see that the hames are a good fit, and see that the draught is in the right place, otherwise the horse will get sore shoulders quickly. Alteration of draught will permit the driver to cure a sore on the shoulder. When the collar is dry give it a good oiling with neatsfoot oil, also the hame strap. Then keep that set of hames for the horse, because it is a bad policy to change the harness. The best place in an 'abreast' team for a young horse is next to the rein horse. This position enables the driver to have more control over it by the use of the cross rein. In a tandem team the youngster should be put either near side or off side behind. This enables the driver to get to the horse quickly. In an abreast team put a good, stout rope around the youngster's neck and tie it to the chain of the horses on each side. Care should be taken to put the rope just behind the hame hooks, seeing that it does not affect the horses by rubbing. In a tandem, if an iron spreader is used in the leader's chains, tie the rope around the spreader. If a wooden spreader is used, tie the rope on to the leader's outside chain, just where the spreader is put in. Do not tie it around the spreader, because, if the horse should hang back, the wood is not strong enough and will break. The driver should examine the chains and see that they are the same length. Do not tie knots in the chains. Should the chains rub the animal, a piece of sheepskin or bag should be wrapped around and tied on the chain where it is doing the damage. The young horse should not be worked more than half a day at a time until it becomes hardened to the work. Particular attention should be paid to the collar and shoulders. The driver should scrape all sweat

off the collar and clean the shoulders thoroughly, when 'yoking up,' with a curry comb and a good, stiff dandy brush. The first two or three times the young horse is put in, the driver should spell the team often and occasionally go and ease the collar off the shoulders of the young one. By doing this the danger of scalding is greatly reduced. When 'yoking up' see that the fringe is removed from the forehead band and the mane from under the collar. Should the mane be matted, knotted, or tangled, and likely to get under the collar, cut it off, or it will injure the horse's shoulder. At night, when the horses are unyoked, wash the shoulders with cold water. This hardens the skin and assists in preventing sore shoulders However, should the horse get sore shoulders, the driver must pay attention to the collar and draught of the hames. All blood, skin, &c., must be cleaned off the collar, and with a leather-lined collar use a wooden mallet for knocking the place which fits on the sore. Care should be taken to have the mallet rounded off, because the edges of a flat-faced mallet are liable to break the lining. Also keep the lining well oiled. With a check-lined collar, the stuffing should be eased away from the place. This can be done with the aid of a large chaff bag needle. By doing this you make a hollow over the sore, and a pad around the sore. Smear this part of the collar with a little grease to prevent the sweat and discharge from the sore entering the lining and making it hard. Do not cut the lining to take out the stuffing. This method not only damages the collar, but also allows the stuffing to come into contact with the sore, and the sore does not heal so quickly. When the collar and hames are removed at night from the horse, wash the sore with cold water and salt. Also remove any hanging skin and scales, because these come off more easily while the sore is hot, and if left on over night they get hard and are not easily removed. If they are left on they will hurt the horse, perhaps making it pull sideways when work is started. Over Sunday, or any day when the horse is not working, smear the sore with grease to keep the flies away and prevent a hard scale from forming. Should the horse be spelled for a time on account of its sore shoulders, give the sores a dressing every day with a good healing ointment. The driver should see that the youngster is given a good drink on each occasion it is let go for this purpose, and it should be shut away and fed by itself, so that the other workers cannot hunt it away from the feed. When working, it should be fed four times a day—morning, noon, teatime, and before retiring to bed. On the first three occasions give it what it can eat and no more, but give it a good feed at bedtime. Do not put fresh chaff in the manger on top of a lot of stale chaff. It is better to take the stale chaff out and feed it when the horse is spelling. The winkers should be removed every night, because winkers left on any length of time are liable to chafe the horse's head, especially behind the ears. Before taking the winkers off, tie a piece of light rope around the neck and let one end hang about 2ft. Be sure to tie a knot in the end of the piece left hanging to prevent it unravelling. The rope will come in handy when catching the horse again. Should the animal refuse to let you catch it by walking up to it, get a stick, put a wire hook on it and catch the rope with it. Once the horse feels the strain on its neck it realises that it is caught and will allow you to go up to it. After the horse has been at work for a while and gets to know what is being done it may get cunning and refuse to let you catch it. Then the use of the whip is quite justified. Give the horse a few sharp cuts across the rear and let it know that you are the master and time for play is finished. Do not chase the horse around the yard throwing the winkers after it. It is a bad habit and a waste of time. Also do not give it a hiding after it has been caught. Should its mouth become sore it will be inclined to throw up its head. This can be prevented to a large extent by putting the couplings on the winker rings and not on the bit rings. Should a driver have a lazy horse in the team and want to touch it up, use a stone for the purpose. This will hit the lazy horse and not flurry the youngster. The whip makes too much noise, and a clod of dirt is liable to break and scatter, hitting other horses, perhaps the youngster. One must always bear in mind, when handling a young horse, that patience is an excellent help. I do not agree with the idea of putting the young horse between two old workers and hitching to a log, because two of the best horses are always taken for the job, resulting in a lot of fooling around when they have any amount of important jobs to do about the farm without assisting to break in a youngster. Put the young horse straight to work. A

young horse should not be under three years of age when broken in; for preference four years old is a better age, because the horse is better able to withstand the work when it becomes aged."

WILKAWATT (Average annual rainfall, 16in. to 17in.).

July 21st.—Present: seven members.

FALLOWING.—Mr. E. W. Brooker, who read a short paper dealing with this subject, said fallowing should be commenced as early as possible after seeding was finished and should be completed by the end of August. Although opinions differed as to what depth the land should be ploughed, he preferred shallow ploughing, *i.e.*, to a depth of about 1½in. When the ploughing was finished and the stumps removed, the land should be harrowed across the ploughing. In the subsequent working of the fallow one should act according to weather conditions, because the rain formed a smooth surface on the land, which necessitated light and continued cultivation until the surface was in the condition of dust. In the discussion that followed, Mr. F. Koch favored ploughing to a depth of 2½in. to 3in. so that the plough would not jump out of the ground when passing over stumps. Members did not consider it advisable to work the land down too finely in that district, because of the danger of drift. If possible the last cultivation should be made during the spring, crossways to the prevailing winds.

CARE OF HORSES.—Mr. A. G. Ellis read the following paper:—"While horses are working they should be stable fed and kept off green feed. Some favor turning horses out and working them on paddock feed, but in my experiences the stable fed horse will outwork the others. The stables should be cleaned out frequently, because stable refuse encourages germs that are detrimental to the good health of the horses. I favor wooden mangers, because they are warmer in winter and cooler in summer. The iron mangers, during winter months, are very moist, and food, when fed under these conditions, is harmful to the horse. Forty pounds of fodder a day is a good ration for a horse. It should be divided into four feeds of 10lbs. each. It is a mistake to allow the horses to constantly have their heads in the manger feding while in the stable. Forty pounds per day is quite sufficient to keep a hard working horse in good heart. An hour and a half should be allowed for the mid-day meal. For the night feed long hay, fed in a separate manger from the chaff, is a good feed. The best preventive of sore shoulders is to have well fitting collars. All horses should work in back bands, and the back bands be fitted so as to ensure a square pull on the shoulders. In the case of horses getting sore shoulders, every care of the animals should be taken by the teamster. He should wash the shoulders well in cold water and keep the part of the collar covering the sore well scraped and clean. A sore that is kept clean will heal more quickly than one that is neglected. It is also a good plan to work a folded bag under the collar when the shoulders are sore. Grooming is absolutely essential, and should be done daily, in the mornings for preference, because the sweat of the day before is then thoroughly dry, and brushes out easily. A good stiff brush should be kept for brushing the lining of the collars prior to putting the horse to work for the day. Particular care should be taken in driving the team, and a mistake is often made of asking four horses to do the work of five. When arranging the team the weight should be as evenly distributed as possible, and the teamster should endeavor to avoid, as much as possible, working a small horse on the same swing as a heavy one. Every horse should be allowed plenty of room in which to work. A mistake is often made of using narrow spreaders. Sixteen inches or 17in. to the horse on the main spreader is required. It is also a good plan when working brood mares in foal to have the swing on which they have to work a little wider than under ordinary circumstances so that there is no danger of chains rubbing. Mares should be worked till within three or four days of foaling, for I invariably find that they are the better for this exercise. Of course, do not give them very heavy work. Horses should be watered before meals and the trough shut off from the main stable yard. Horses that can get water whilst feeding do not digest their food so well as when watered before feeding. The trough should be cleaned out at frequent intervals, because if left too long, it deprives the horses of fresh water, which is essential to ensure good health. Horses should have two spells during the year; one in the spring and one after the

harvest. When turned out they should be watched, especially after harvest, to see that they do not become affected with sand. Some farmers drill in paddocks for horse feed in this district. I should refrain from doing that, because there is plenty of natural feed, and the natural spring feed is better for stock. If the practice of drilling paddocks for feed is carried out, I favor barley in preference to oats, because oats, when green, are bitter, and horses when feeding on oats will often drink more water than is good for them."

BARMERA, July 12th.—To an attendance of 70 members and visitors the Deputy Horticultural Instructor and Manager of the Berri Experimental Orchard (Mr. C. G. Savage) gave a pruning demonstration on Mr. Cockshell's block. At a further meeting held on July 30th Mr. W. E. Ellenby gave an address, "The Feeding and Care of Poultry." The Hon. Secretary (Mr. D. H. Brooke) presented the annual report, and the officers were elected for the ensuing year.

BLOCK E, July 24th.—Mr. F. J. Olorenshaw, a member of the Renmark Branch, attended the meeting and read a paper, "Horsework," which was followed by a lengthy an interesting discussion. The annual report of the work performed by the Branch was presented by the Hon. Secretary (Mr. C. L. Ashenden), and the officers were elected for the ensuing term.

GERANIUM, July 26th.—Mr. W. Pannell read an article, "The Preparation of Fallow." The Branch decided to hold a crop growing competition during the ensuing year.

MYRLA, July 21st.—Several subjects of local importance were brought before the meeting for discussion. The delegates to the forthcoming Annual Congress were appointed. It was decided that future meetings of the Branch should be held on September 22nd and October 20th.

POMPOOTA, August 1st.—Mr. A. Lambert read a paper, "Pig Raising," and an interesting discussion followed. A further meeting was held on August 15th. Mr. E. Leishmann (Orchard Instructor and Inspector) attended and delivered an address, "How to Prune a Pear Tree."

WINKIE, July 26th.—Twenty-two members of the Winkie Branch paid a visit to the Government Experimental Orchard and, under the guidance of the Manager (Mr. C. G. Savage), inspected the various horticultural experiments that are being carried out.

YOUNGHUSBAND, July 27th.—A paper dealing with the subject "Gardening" was contributed by Mr. J. Gowling, and an interesting discussion followed. Members also discussed the question of Cotton Growing along the River Murray.

SOUTH AND HILLS DISTRICT.

CHERRY GARDENS (Average annual rainfall, 35.03in.).

July 24th.—Present: 14 members.

ROAD MAKING IN THE HILLS.—Mr. C. Ricks read a paper dealing with this subject, in the course of which he said one of the most serious questions that the producers had to face was that of getting produce to the market. The roads in many places were in a worse state of repair than they were 25 years ago. He was of the opinion that it had been false economy to starve the roads, because once they got into a state of disrepair water lodged in the holes, and these soon made larger by the traffic. The new road, the speaker said, should not be less than 18ft. wide. In laying out the road the centre of the road should be marked, and a plough worked both ways to form the crown. The crown of the road should not be less than 12in. higher than the outside. After the road had been rolled the centre would be reduced to a height of 8in., which would give a good fall for the water. Next an 8in. coat of 2in. metal should be applied, and the road well rolled and dressed with 1in. of good blinding material. New roads should be made in the early spring, so that they would have a chance to settle down during the summer. When roads were being made through swampy or sandy soils it was sometimes difficult to get a good, firm bed for the metal.

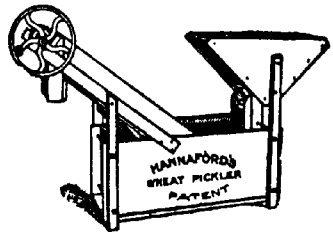
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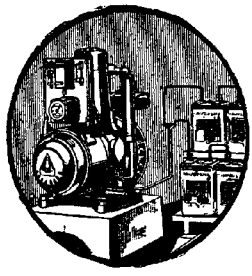


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In those places it was a good plan to place a 6in. layer of ti-tree, furze, or broom bush in the bed of the road to prevent the metal from being pushed down into the sand. Keeping the roads in repair was a most difficult matter in the Hills on account of the tendency for roads to wash out with the heavy rains. He believed that the present system of maintaining the roads was at fault. The work of the district councils should be confined to district roads. The system he advocated was that one man should have the care of six miles of main roads. It should be his duty to keep the watertables clean, keep the roads clear of loose stones in the summer, and put blinding on patches of stones that were often pulled up during the dry weather. The man would also be required to help put out the metal in the winter.

CURRENCY CREEK.

July 6th.—Present: 13 members.

QUESTION BOX.—The meeting took the form of a "Question Box." Several items of local interest were brought forward for discussion. In reply to a question "Will Cultivation Kill Subterranean Clover?" members were of the opinion that intense cultivation would be detrimental to the plants. It was generally agreed that the best plan to adopt to set a broody hen was to place a straw-lined box, with a lid, on the ground. Members considered that working horses kept in better condition when fed on chaff than when fed on long hay. It was thought that oaten hay made better chaff than sheaves cut from the wheat crop. In dealing with the question of the best ram to use on Shropshire ewes for the purpose of breeding a lamb suitable for the export trade, members favored the Merino. It was generally contended that whole barley should be crushed before being fed to pigs.

FARMING AS A BUSINESS.—At a meeting held on July 26th a paper dealing with this subject was presented by Mr. G. W. Ritchie. He said:—While I deal with farm management, I wish more particularly to refer to the "Business of Farming," because a farm cannot be managed successfully unless the farmer is a keen business man. Farming is as much a business as any other of the professions or trades, in fact, in my opinion, the business of farming is far more complex in character than many other professions. There are so many varied conditions that the man on the land has to contend with that a farmer, in the days of power farming, &c., needs to be a specialist, as it were, in his own line of business. Before I continue further with the subject of management, I would like to ask the question, what qualities go to make a successful business man? because hereon the whole management of the farm hinges. In my opinion one of the greatest assets for a business man to possess is "personality." No matter what the concern may be, or how large or small, it is always the expression of personal force, just as the personal force of a nation is the sum total of the personal force of its people. Without a doubt men, not money, are the determining factors in all commercial and industrial undertakings. Another point, and a very necessary one, a business man must possess plenty of energy. A man who wishes to forge ahead must work, he must be energetic. Energy has developed continents, created industries, built up large business concerns, and made the powers of men. Harness your energy with common sense and guide it with system. Here is another dominant factor, which must prevail if a farmer hopes to be successful, it is system. I do not think there is any phase of a farming business that does not require system. A good motto should be system, system some of the time, and system all the time. Nothing must be left to chance or to take its own course; it is no good being like Micawber and wait for something to turn up, because with farming the only things that seem to turn up while you wait are weeds, and plenty of them. To be thorough and effective in any business proposition, a system must be followed and very closely adhered to. In every walk of life we find that the man, who is methodical and systematical in all his undertakings, is the one to whom success is not far distant. A good ship does not necessarily guarantee a safe port, nor does a good system alone ensure a successful business. Concentration is another very important feature connected with good business. Do not allow anything to pass half finished, but devote all your energy and concentrate your mind upon it and see for yourself that the work is complete. A prominent British financier once said, "Focus your ability on one point until you burn a hole in it." Some men never get up until they are

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called; if no one happens to apply the stimulus they are gunpowder without the spark, dough without the yeast, or an engine without the steam. No alarm clock is going to strike the hour of our opportunity. Fate never yet failed to turn down the man who waited for something to turn up. The foregoing, while dealing in a general way with a business man, and the qualities essential thereto, are applicable to the business of farming, because, as I have previously stated, farming is quite as much a business as any other trade or calling may be. I have known business men to fail as farmers, but that is not proof that business acumen is not essential to success on the land. In fact, I think keen business ability is needed more in farming than in any other concern, because most trades are so thoroughly organised that a price can be fixed for an article based upon the cost of production, while the farmer has to abide by the ruling rates in the market. Here again, system is required; on a farm that is managed systematically and has a good business man in control, all the work must go along smoothly without any overlapping. To make a success of the business of farming the farmer must be fully alive to all the scientific aids to agriculture. Research work is conducted on all Government Experimental Farms solely to assist the man on the land, and the individual who allows advantages like these to go by the board is not conducting his holding on correct business lines. It is absolutely essential that a correct method of bookkeeping should be followed on the farm, there are several books on the market at present which will assist the farmer in this direction. Constant scrutiny of the various operations will quickly show where improvements are possible. It is not possible for any business to be conducted satisfactorily unless complete records are kept, and it is here again that a good system of keeping accounts is necessary. Of course, we know the old adage that "Experience is a great teacher." Quite so, but there are many men to whom the lesson does not appeal; they are content to just muddle along and consequently do not get the best out of the land by supporting every progressive movement and being alive to the possibilities of their holdings. They can increase the production and enhance the value of the property. There is one point I would like to touch upon at this stage, and that is the proper care of machinery and implements on the farm. We do not find a good business man neglecting the machinery with which he operates his concern, but how often do we see valuable farming implements left to the tender mercies of the weather; machinery neglected in this manner means a loss that can be avoided, and should be avoided. The depreciation on farm implements is quite enough in the ordinary course of operation without any loss. A farmer to be successful from a business standpoint must study the cost of production in every direction; he can turn to his records of sales, &c., and then turn to the cost of production; the margin representing profit must always be the factor for the man on the land to keep in view. Competition is another feature that every business man may be alive to. Certainly there is not one business where there is not competition; it is opposition that in these days when power farming is gradually gaining a foothold, it behoves the farmer to study the cost of production and to ascertain the cheapest possible methods by which to conduct his business. Of course, we recognise the producer has at his disposal the markets of the world, but, there again, in one country the cost of production may be far below another. Here time-saving and labor-saving machinery is going to be not only a convenience, but an absolute necessity if the farmer means to run his farm on business lines. Consequently, if the farmer wishes to apply correct business methods and shrewd management to his property, he must be fully alive to all the emergencies relating thereto. There is an old saying, "Nothing succeeds like success." Well, it is only with the application of a good system, based on sound business management in relation to the business of farming, that any man can hope to succeed.

CYGNET RIVER.

Dairying and Butter Making.—The following paper was read by Mr. L. H. Moar:—The principles of butter making are easily understood. When studied from the standpoint of present knowledge, most of the mystery that formerly surrounded the work of the butter maker disappears. The making of good butter is not a system of "rule of thumb," but certain well defined rules can be laid down, which, if followed, will ensure success. On the farm, the maker has control of every step in the process of making butter. Beginning with the supposition that cows are normal and healthy, he starts with one ideal condition, namely,

a source of pure milk. As the milk is drawn from the udder it should be free from any element which would cause its decomposition, but the fact that it will in a few hours become sour or show evidence that other changes have taken place proves that a foreign element is present to produce these changes. A study of these changes and their cause is the first and most important lesson for the milkman and butter maker. Everyone is familiar with the changes that often take place in milk, and those which occur in the spoiling of fresh meats and vegetables, though the causes that produce these changes may not be apparent to the observer. It is also a matter of common experience that in hot, moist weather, these changes take place with greater rapidity than in cold or dry weather. Everyone who has handled milk has learned that cleanliness in everything that comes in contact with it is one of the essential factors to success. Cold storage, such as may be supplied by the common household refrigerator or cooler, is also necessary for the keeping of milk and other perishable products in hot weather. The cause of the spoiling of fruit, vegetables, meats, and milk was discovered by Pasteur, to be bacteria. He found that these minute forms of life, so small that it takes a very powerful magnifying glass to see them, were the cause of all decomposition. A study of their life, habits of growth, the food on which they lived, the kind of substance on which they could develop, and the temperatures most favorable to their growth, revealed the scientific necessity for observing perfect cleanliness in all dairy utensils and for keeping the milk cold. It was found that bacterial life is in existence everywhere, and only awaits the proper food, moisture and warmth to cause the bacteria to multiply very rapidly. Just as a grain of corn grows when given proper moisture and warmth, so the germ life that finds its way into milk utilises the food and warmth found there to grow and multiply, causing decomposition. It has been found that when milk or other perishable foods are kept free from bacteria they will not spoil, and, further, that foods of this nature, when kept at low temperatures, are very much longer in spoiling, although they may contain large numbers of germs. When milk and other products are heated to a high temperature the bacterial life is destroyed, and the products will keep for a long time if no additional bacteria gain access to them. In all large modern factories there is a machine, known as the pasteuriser, which is a very large vat with a revolving worm inside, through which a stream of hot water, about 130deg., runs for about 20 minutes. Too many milkers regard the work of milking as a dirty and disagreeable task. The work has resolved itself into nothing more than the manipulation of the udder, and is to be hurried through as quickly as possible. The element that takes from all drudgery its unpleasantness is wanting. That element is thinking along lines tending to improve the work. In the process that attends the milking of the cow there is enough to cause the milker to study seriously the work that leads to the making of a perfect pound of butter. Milk as it is drawn from the udder is nearly free from bacteria. Could it be kept in this condition, it would keep for many hours before any perceptible change would take place. The first bacteria enter during the time of milking, and are naturally from the cow and her surroundings. The manipulation of the udder works off hairs, particles of skin, and many instances, particles of manure that adhere to the hair and udder. All of this material finds its way into the milk pail, and carries with it great numbers of bacteria. The warm temperature and the presence of congenial food supply that is in just the right physical condition cause these bacteria to multiply very rapidly, and unless something is done to check their growth, souring or other evidence of decomposition will take place in a few hours. The rapidity with which these changes occur will depend almost entirely upon the temperature at which the milk is allowed to stand, and the number of bacteria that find entrance to it. These facts are constantly in the mind of a careful dairyman. He knows that the first step is that of prevention. The work of milking should be performed in such a way that few bacteria will find their way into the milk. The milk should be cooled quickly and thoroughly immediately after it is drawn, in order to check the growth of bacteria that will, under the best of conditions, find their way into it. All this leads to the conclusion that the cow must be carefully cleaned. This is as good for her physical well-being as for the protection and purity of milk. The udder should be thoroughly washed with clean water so as to remove most of the dust, and what remains is less likely to fall into the milk bucket. If the milking is done in a shed, as it usually is when a fair number of cows are milked, there are

several points which need attention. The air must be pure and free from dust, the floors must be such that they may be washed and swept with ease (it is a common plan to have a small elevated tank at the cow shed and a length of hose for flushing the floors, which are usually of either bricks or cement, and sometimes slabs are used, but they are not the best). The hands of a milker should be rinsed between the milking of each cow. Some dairymen, especially those whose milk is taken by the condensing factories, insist on their employees wearing scrupulously clean, white goves, whether milking by hands or machine, and their sheds are constantly under the whitewash brush. A whitewashed building shows up any dirt or cobwebs to their disadvantage. A shed is usually built facing the east, so as to have the pure, cleansing rays of the morning sun, and the floor, as mentioned before, should be of brick or concrete, and slightly sloping outwards, but the grade must not be too sharp, because it is very slippery when wet, and many a good cow has been ruined through slipping and straining herself. If cows are to be fed whilst milking, ample depth must be given in the construction of the shed. Feeding, during the milking, was highly condemned up till a year or two ago, but now it is practised on all fair-sized dairies, especially if the machines are in use. One more word in regard to the milker before I pass on. If anyone is a little hasty tempered, the best thing is to leave dairying alone. A really good cow is nothing more than a bundle of very highly-sensitised nerves, and as some people are termed thin-skinned and easily offended, so is the good cow. She must be gently and carefully handled, and, above all, a few rowdy boys are the worst things on a dairy farm. Cows must be milked regularly. Dehorning is now being practised on most dairy farms. The dehorner costs about £4 10s., and if subscribed to by several members the price to each comes comparatively low (my share was 14s., and I had over 50 head of stock done, whereas the local veterinary surgeon used to charge 2s. per head. The proper washing of milk utensils is something which is often misunderstood. All milk should be rinsed from the surface of a vessel with either cold or lukewarm water before coming in contact with hot water, because the heat will cook the milk on to the surface, forming a coating very difficult to remove. If this coating is not removed it furnishes food and place for bacterial growth. This is especially true around places liable to remain moist. After rinsing the vessel free from milk, it may then be washed in hot water and scalded or steamed. There should be added to the water some good cleansing compound; some of the so-called washing powders are very objectionable, because grease of some kind is used principally in their composition. When such powders are used, a coating of thick grease will be formed around the edges of the washing pan containing the water. Powders can be procured that are guaranteed to contain no grease, and usually they are excellent cleansers. Washing soda is frequently used. In scrubbing the surfaces of milk vessels, a good brush should be used; it costs little, and will get into corners fairly effectively. Another point: the final rinsing of dairy vessels should be in thoroughly boiling water or, better still, steam. There is a very effective steamer on the market, procurable for about £4. With a couple of handfuls of eucalyptus leaves you can have steam inside three minutes; that seems incredible, nevertheless a fact. It is all the better if the articles remain in the boiling water or steam for a few minutes, so that the heat may penetrate completely through the tinware, the heat killing all bacterial life. After boiling or steaming, the surface dries very rapidly, and should be allowed to do so naturally. Turn the vessel so as to drain, and in a few moments the heat of the metal will dry the surfaces. A cloth is generally used for drying, but that usually undoes the work of scalding to a large extent unless a very clean cloth is used each day. It is a good plan to stand utensils out in the sun so that the rays may penetrate inside of them. Most species of bacteria cannot live in the direct rays of the sun, and for this reason sheds and milk rooms, except cold storage, should be built so as to allow any abundance of sunlight to enter. Milk is often spoiled by allowing it to stand too long in the bails before taken to the milk room. It should be immediately removed to a place free from odors. If milk is placed in a cellar where there are decaying vegetables or fruits, their odors will soon be acquired by it. The room should be built to allow for ventilation. Cooling arrangements must be made in summer time, if only to stand the cans in a tank or vats of water. In carrying cream to the factory in hot weather wet bags must be placed over same, because one second-grade can of cream will be [illegible]

There are two general methods in practice for skimming the milk. One is to set the milk in shallow pans and allow the cream to rise. The other is the use of the centrifugal separator. The dairyman cannot afford to be without a separator. It removes practically all the butterfat from the milk, while the old method of gravity skimming will leave from one-eighth to one-quarter of butterfat in the milk. The cream from the separator is of a finer quality, and a much bettter product can be made from it. The skim milk is fresh and sweet for feeding, and is far superior to that from the gravity system. There are numerous kinds of separators on the market, but they differ in details of construction, rather than in the principles on which they work. The dairyman should understand these principles. In selecting a separator one should first determine its value for good work and having parts easily accessible, then examine its mechanical construction to see if it will stand long use. There are a number of factors to be observed which influence the separation. The difference in the length of time which it takes to separate cream by gravity and by centrifugal force shows plainly that the time varies with the amount of force applied. The shorter the time the greater the force must be. Skim milk from the separator contains less fat than that secured by the gravity system, showing that the greater force causes more perfect separation. The following conclusions regarding the use of the separator may be drawn:—(1) If the amount of milk that passes through the separator in a given time is a fixed quantity, any increase in the speed of the machine will tend to cause closer skimming, because of greater force exerted; (2) if the amount of milk that passes through in a given time is increased, and the speed remains the same, the skimming will not be so perfect, for the centrifugal force is not exerted on the milk for so long a time. It is evident, therefore, that the closeness of skimming is the result of two factors—time and force; if either of these is decreased, the result will be poorer work. If either is increased, better work will result. Two errors are made in operating separators because of ignorance of the facts just stated. The first in allowing too much milk to pass through the machine. As there is a limit to the practical speed at which the machine can be safely run, it is not good practice to try to overcome the error by increasing the speed beyond the safe point. The feed outlet is usually adjusted so that too much milk will not run through, but cases have been known where operators, anxious to shorten the time of separation, have enlarged the opening, allowing too much milk to pass. This error is not so common as the second, which is to allow the speed of the machine to become too slow. The slow speed does not generate enough force to skim properly, and the result is loss of butterfat in the skim milk. The number of revolutions per minute required by the machine is usually indicated on the machine or in the instruction book belonging to it, and this should be strictly followed. All liquids flow more readily when warm than cold. This is not so noticeable with milk as it may be with molasses or tar, but the principle holds just as true, and is readily shown in the separation of milk. Everyone has observed that cold cream does not flow as readily as warm cream. As cream is one of the products of separation, and has to flow from the machine through a small opening or outlet, it is seen that the warmer it is the more readily it will flow. If the flow of cream is checked, more milk will be forced out of the skim milk outlet, and if the obstruction to the flow becomes too great, butter fat will go out with the skim milk, because it cannot move fast enough through the cream outlet. For this reason, the nearer the temperature of the milk approaches animal heat, the better will be the separation. While some machines are supposed to skim as cold as 60deg. or 65deg. F., it is not a good practice, because the skimming will not be so close. The milk should be at a temperature of 80deg. or higher. It will be seen, therefore, that a third factor, in addition to rate of feed and speed of machine, namely, the temperature of the milk, has a direct bearing on separation, and it may be accepted as true, that the warmer the milk the better the work. Summarised, the points in the operation of a separator, given in their order of importance as bearing on the quality of work, are as follows:—(1) The speed of the separator must be uniform and up to the standard required by the makers of that particular machine. (2) The temperature of the milk should be such as will make it flow readily, the warmer it is the more perfect will be the separation. (3) The amount of milk that is run through the machine should remain constant, and should not be increased over that which is intended for the machine. (4) The machine should be set on a

turned, such as would tend to interfere with the even flow of the milk through the bowl, and thus destroy its efficiency in skimming. (5) The separator should be thoroughly and scrupulously clean, particular care being taken that none of the tubes through which the milk flows become obstructed in any way. (6) The test of the cream can be readily changed by a slight turn of the screw in the bowl. In the mechanical operation of the machine none but the best oil should be used, and this should not be allowed to gum or become dirty on the bearings. It is a good practice to flush the bearings with kerosine occasionally, by making a run with kerosine in the oil cups. This will serve to cut out any gum or dust that has accumulated in the bearings, and will make the machine run free and easy, thus greatly increasing the length of time that it will last and do perfect work. The milk should be separated as soon as possible after milking, while it still contains the animal heat. If the milk has been handled in a cleanly way during milking, it can be poured directly into the receiving can of the separator without straining. The dairyman who depends upon the strainer to clean the milk rather than use cleanly methods of milking, is the one who makes the poorer butter. If it is necessary to strain the milk, a very fine wire strainer should be used. It is very difficult to keep a cloth strainer in good condition, and if not kept in good condition is the seed-bed for trouble. When a strainer cloth becomes yellow it rarely, if ever, smells clean, indicating that decomposition is going on, and that it is not fit for use. For this reason it is best to discard strainer cloths entirely. If a strainer other than wire is used, it is best to use some material, such as absorbent cotton, which can be thrown away at the end of each milking. Before starting the separator, the operator should look carefully at the bearings or wearing parts, putting a few drops of oil on each, and noting whether the oil cups are dropping correctly. Instructions for care and oiling each machine are supplied, and should be carefully followed. The makers have studied this problem, and are bound, for their own protection, to give proper instructions for operation. In the winter time, when everything is cold, hot water should be run through the machine when commencing. This warms up the surfaces and prevents the milk from sticking as it would if cold. It also prevents clogging, and makes cleaning much easier. Bring the machine gradually up to its normal speed, turn the milk in slowly until the tap is full open, and keep a constantly uniform motion on the handle during the entire run. When all of the milk has passed from the supply can, a few pints of skim milk should be poured through. If this is not done a quantity of butter fat will remain in the bowl, because it cannot rise if no more milk goes into the bowl. Pouring in skim milk forces it all out. Warm (not hot) water may be used for this purpose, but that it not always convenient. The first work on completion of the separation should be the care of the cream. It is the product for which all the previous work has been performed, and it is worse than folly to neglect it now that it is secured. The cream must be cooled at once to check the growth of bacteria. The best method for doing this is to place it in a deep, narrow pail immersed in cold water just taken from a well or cool tank. Then stir it for a while to assist in cooling. A good thermometer ought to be used. It will only take a few minutes to cool the cream in the manner mentioned above. As soon as it has cooled, cover the can, to prevent any further bacteria entering Warm cream should never be mixed with cold. The result of mixing is always quick souring. The bacteria in cold cream are dormant or inactive, and will remain so, if kept chilled. So soon as the temperature is raised a little it quickens the life of the bacteria, and they increase at an amazing rate, causing souring in a very short time. Too much emphasis cannot be given to the two points mentioned above, namely, the quick and thorough cooling after separating, and caution in regard to mixing the warm and cold cream. It is of more importance to attend to the cream at once after the separating has finished than anything else at that time. The calves and pigs can wait for their skim milk, but bacteria in the cream wait for nothing until the temperature favorable to their growth is reduced. In hot, dry climates, where evaporation is excessive, another method for keeping milk or cream cool may be adopted. After the cream has been cooled, as described above, set the can out in the open, but shaded from the sun, a bucket of water is set upon the lid of the can, a cloth is made into a bag and slipped down over the can after it has been wetted, the upper end is turned down into the water. This cloth acts as a syphon, and will gradually empty the bucket. From the cloth thus kept wet the can and its contents under the cloth will be kept cool even on

the hottest days. In fact, the hotter and drier the air the greater the cooling effect, as there will be more rapid evaporation. Care must be taken to keep the water fresh and clean. Very soon after the separation has been completed, the separator should be cleaned. It is imperative that it should be washed every time after it has been used, and the sooner it is washed the easier will be the operation. The general directions for washing dairy utensils apply to the parts of the separator that come in contact with milk. In cleaning the machine the frame should not be neglected. Sometimes an operator thinks it is useless to spend time to keep it clean, because it does not come in direct contact with the milk. In most cases, where a machine is to be found dirty and grimy, it will be found out of repair in other ways. The bearings will usually be gummy, and if examined the machine will be found to be out of level, and more often than otherwise the parts that come in contact with the milk will not have been properly cleaned.

A further meeting was held on March 3rd, when the question of the advisability of erecting a jam factory or drying plant on Kangaroo Island to cope with the fruit grown on Cygnet River was brought forward for discussion.

MORPHETT VALE (Average annual rainfall, 23.32in.).

July 24th.—Present: 17 members.

Mr. S. H. Marshall read a paper, "What's Wrong with Australia," and many channels of interesting thought were opened up for discussion.

On July 25th a tractor demonstration was held under the auspices of the local Branch of the Agricultural Bureau in Messrs. Walkers Limited vineyard. A large number of members and visitors attended, representing the majority of the southern vinegrowing districts.

ROCKWOOD.

July 23rd.—Present: 14 members.

LUCERNE CULTIVATION.—Mr. L. Neighbour read the following paper:—"Lucerne has not received the attention it deserves in this district. It ranks foremost among fodders for dairy cattle. When selecting a piece of ground on which to plant lucerne, it must be remembered that drainage is one of the most important items. Lucerne will not thrive where water remains, on, or near the surface for any length of time, so if it is desired to grow lucerne on swamp areas, where either floods or rising springs are likely to be troublesome, something must be done to remedy these defects. Underground drains will be found effective in cases of rising springs, while floods may be guarded against, to a certain extent, by clearing all obstructions from the watercourses before the commencement of winter rains. Cultivation and preparation of the soil should be very thorough, and should commence some months before it is intended to sow the seed. Seed may be sown in either autumn or spring, but I prefer spring sowing. The land should be ploughed after the first rains for preference and left rough until the weeds have made a good start. It should then be cultivated with a disc implement, and, if fairly friable, could be left until shortly before the seed is sown.

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The final working should be very thorough—ploughing, discing, harrowing, rolling—and repeating the process until a fine tilth is obtained. Next comes the selection of the variety to be sown. Hunter River Broad Leaf is without doubt the best; others in order of merit, as I would put them, are South Australian, Provence, and Arabian. Numerous other varieties have been tried on the Murray swamp lands, but these seem to have been most successful. Arabian lucerne makes more winter growth than any of the other varieties named, but it is easily outclassed during the summer. It is also lighter and seems to contain less substance than the other mentioned varieties. For sowing the seed broad casting by hand, if carefully done, will give the best results. The sower should follow a three-leaf harrow, sowing the seed with finger and thumb. An ordinary milk bucket will be found a convenient receptacle for the seed, and if the team driver is instructed to keep just a little ahead of the sower there should be no difficulty in getting the seed spread evenly, provided a calm day is selected. From 12lbs. to 15lbs. of seed is generally sown on irrigation areas. The smaller amount will be found quite sufficient if there is a good germination. The seed should be covered by rolling only, because it does not need to be deeply buried. The young lucerne should be cut so soon as as it shows signs of blooming. The mower blades should be sharp and set to cut as low as possible, otherwise stalks will be left, which later on will become troublesome. Some growers prefer taking off the first cut with a scythe, because it will cut more closely than a machine. Lucerne should be allowed to wilt for at least 24 hours before being fed to stock. If fed to milking cows immediately it is cut, it will impart a strong flavor to the milk and cream. Cows are also liable to bloat if fed on freshly cut lucerne. A sure preventive for bloat is to keep the cows well fed. It is only when a cow eats ravenously that she becomes bloated. Some dairymen contend that milking cows will do well on rough fodders, such as cocky chaff, brewers' grains, &c., when lucerne forms a large part of the diet. During the summer there should be a surplus of lucerne, which can be made into hay. This should be cut when it shows a little bloom, because, if allowed to come into full bloom, it will be found that a new growth has commenced, which will be injured in the cutting. The lucerne is at the best stage when flowering has just commenced. If the weather is very hot the lucerne may be raked on the same day as it is cut; if not, it is advisable to use the horse rake on the second day. It can be cocked on the third or fourth day and carted at the end of a week. The hay should not be left in the paddock until the leaves commence to fall. It will retard the growth of young lucerne under the cocks if left too long. If the lucerne is doing well, a cut should be taken off every six weeks or so during the summer, and it should be irrigated at about those intervals if a large supply of water is available. Open channels, 3 or 4 chains apart, will be found suitable for this style of irrigation, but it will be found necessary to dam the water at intervals along the channel if the fall exceeds a few inches to the chain. A small plot of lucerne will be found to be a valuable asset on the farm where a water supply, pure enough for the purpose, and of sufficient strength to carry a windmill, is available. An annual stirring up with a tyne implement will keep the weeds in check and prolong the life of the lucerne A top dressing of bonedust or superphosphate will also be found beneficial when the lucerne is given an annual cultivation, which should take place early in the winter. A lucerne plot, if well started and cared for, should last for at least 10 years, so that it is well worth while going to a little trouble to keep it in good order. Lucerne grown under irrigation should not be grazed if the best returns are to be expected, but a few pounds of lucerne seed sown with the hay crop will provide good green picking for the dairy herd after the summer rains. Lucerne seed sown in this way will not only add to the value of the pasture for some years, but will give a fine sample of hay, which is much appreciated by dairy stock.'' In the discussion that followed, Mr. Stacey stated that he had planted a small area of lucerne and had gone to considerable amount of care in draining and preparing the land, but the lucerne, after getting a good start, was eventually destroyed by the lucerne flea. Mr. G. Solly said lucerne could not be grown successfully on the swamp lands unless the soil was deeply drained. Mr. H. Dunn considered lucerne an easy plant to grow where land was suitable. Two good waterings were sufficient in hot weather. He believed in dressing the lucerne plot with stable manure each year in preference to dressing with superphosphates. He did not advise anyone to turn cows on to the lucerne to graze, because it would cause bloat. In cutting lucerne for feed, he would cut in the morning and feed to the cows in the afternoon. Mr. Ness supported

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following publications have been issued and are available for distribution at prices mentioned :—
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E AGRICULTURAL BUREAU.—Particulars of this Organization, of which every farmer should be a member, can be had on application to the Department.

Mr. Neighbour, and thought a large area of land in the district very suitable for growing lucerne. Mr. H. E. Henley favored dragging a bush to rolling for covering lucerne seed, and would sow at the rate of 10lbs. seed and 150lbs. superphosphate. Mr. Green had planted a small area of lucerne, but after a period of three years couch grass choked the plants and very little survived. He favored planting in the autumn, because hot winds were likely to kill off the young lucerne when sown in spring. Mr. J. Steed said drainage was one of the most essential items in growing lucerne. Several other members joined in the discussion, and, generally speaking, members agreed with the paper, and also thought the locality adapted to the growing of lucerne successfully, providing the lucerne flea could be kept in check.

ALDINGA, July 25th.—Mr. C. McKenzie read an interesting paper, "The Management of the Horse." Several other topics of local interest were brought before the meeting for discussion.

PORT ELLIOT, July 21st.—Mr. W. E. Hargreaves contributed a paper, "Hedges or Breakwinds for Homestead, Orchard, or Pleasure Grounds," and an interesting discussion followed. It was decided that future meetings of the Branch should be held at 2.30 p.m. on the third Wednesday of every month.

SOUTH-EAST DISTRICT.

ALLANDALE EAST.

July 27th.—Present: 18 members and visitors.

COLT BREAKING.—Mr. E. Smith, in a paper dealing with this subject, said the first point that should receive attention when the work of breaking in a colt was to be undertaken, was to see that a good strong yard was available so that the colt could not get away. Failing a crush pen, he suggested that the colt should be caught in the stable. When the colt was first taken into the yard, every precaution should be taken not to excite the animal. A rope should be placed on a long stick, and the colt's back rubbed until the rope could be slipped over its head. The colt should be allowed to run around the yard, when it could be brought up to the tie post, and allowed to pull back if it felt so inclined. Then a rope should be placed over the wither, through the forelegs, and through a ring around the colts neck, after which the halter could be put on and the colt given a rest for a while. Next day the mouthing bit should be placed in position, the horse breaker taking the opportunity of speaking in a quiet and soothing voice to the animal. A rope should then be attached to one side of the bit and the colt driven around the yard. After that had been done some little time, the rope should be changed to the other side of the bit and the animal made to run around the yard in the opposite direction. Next, the colt should be harnessed with a surcingle and crupper, and the reins tied back to the surcingle. One rein should be made somewhat tighter than the other and the colt left alone for an hour or so. After the spell, the tight rein should be loosened and that on the other side of the bit tightened. When the education of the colt had proceeded along these lines for a day or two, the horse should be taken out of the yard and driven around the paddock with the reins. If the colt was to be used for buggy work he suggested working the youngster alongside a quiet horse for an hour or two. Next day the colt could be put through the same performance. In the discussion that followed, Mr. F. Tooth said it was a good plan to place a ring in the top of the post in the centre of the yard, to which the halter rope should be attached so that the colt could circle around the yard. Mr. McCabe said if a rope was placed under the tail of the horse the colt could be brought up to the post without any difficulty. Mr. T. Earl favored a two-wheeled vehicle for breaking in the colt because there was less danger of a capsize. Mr. J. Stewart thought a long shafted vehicle should be used if the colt was given to kicking. Mr. C. Griffin mentioned the use of heavy sledges for breaking in draught colts. Mr. W. Laslett considered that when the sledge was used there was a danger of the colt getting its legs over the chains and starting to kick. Mr. McCabe thought that the foal should be

taught to lead and tie-up, so that time and trouble would be saved. Mr. Stewart considered it advisable to break in the colt with an open bridle, but Mr. Butler, who had tried that plan, found that the horses learned to shy at almost any object. Mr. E. Smith expressed a preference for the breastplate when the horse was worked in a cart, but Mr. Tooth thought a breastplate too narrow for heavy work. Mr. Smith said that during the war all the horses used breastplates, and at times the animals were called upon to do very heavy work.

GLENCOE (Annual average rainfall, 33.84in.).
July 27th.

AMBER CANE.—Mr. S. J. Bonney read a paper dealing with this subject, the salient points of which were the ability of the crop to resist droughty conditions and apparent partiality to the darker colored soils. The speaker said that gradual feeding off was necessary, say half an hour the first day, one hour the second, and so on until it was feasible to leave the cows all day. That practice modified the risk of the cane "blowing" the cows. As to the method of sowing, Mr. Bonney said that he used 15lbs. to 20lbs. of seed per acre and sowed through every other drill. He sowed in November. The crop made its appearance in five or six days and was ready for feeding off in the following February. He fed his cows continually upon it until May and regarded the cane as a great success. An interesting discussion followed, during which Mr. Ferguson said that in all summer fodder he found that especially good soil cultivation was imperative. Mr. A. Tregenzea said that he had had very good results from Japanese Millet, though it did not grow to such a height as Amber Cane. A few members generally thought that Amber Cane was rather susceptible to frost, and that in bad years, such as the present, it was rather risky to put too large an area under crop.

MOUNT GAMBIER (Average annual rainfall, 32in.).
August 11th.

DEALING WITH SECOND-CLASS LAND.—Mr. A. A. Sassanowsky read the following paper:—"Our soils can be divided into three separate classes—(1) good volcanic and alluvial soil; (2) sandy land mixed with patches of good soil; and (3) poor sandy soil. The first has been cultivated to the best advantage, divided into small blocks, and has risen to such values as to be used mainly as residential blocks, whilst the occupants are working at other industries, and not solely dependent on their blocks for a living. The poor sandy soil is now overrun by the rabbit pest, and is only suitable for forestry, and the Government should acquire it and go in for more practical forestry. Our forests have wonderful productive powers if only guarded from fires, whilst the soil is very suitable for the growing of pines. Thus, instead of being waste land and a breeding ground for rabbits, it would become a valuable asset to the State. The second-class land, not land valued from £30 to £35 per acre, but of values from £8 to £15 an acre, is that which the Government is now repurchasing for closer settlement, and it is on this land I wish to speak, and by judicial handling, instead of exhausting it, try to keep its fertility and improve it. The blocks, when allotted to the settler, are usually overrun with rabbits, but there is a fumigator on the market which will kill the vermin effectively. However, this is a fairly expensive operation, but when once the land is cleared of rabbits it is not very expensive to keep them under. It is in this that the district councils fail to help those who try to exterminate the rabbits by neglecting to carry out the Vermin Act. Councils should be more severe on those possessing land of such values, who neglect to kill the rabbits. It is better for the councils to enforce the Act than to try to kill the rabbits for the landowners, and much cheaper. The blocks are being cut into areas too small at present for the value of our products, but the settler is there, and he is supposed to make a living from it. He is only going to do this by cultivating the whole area, and it is quite possible he will exhaust the land. This land will not stand cultivation every year, and after the third or four crop will be quite likely covered in sorrell. It would be better not to try and pay for it in quick time, thus exhausting it, but to take

a longer period to make it your own by 'walking off' part of the profit in stock than by carting it off in grain. This class of land is not suitable for growing summer fodders, because the light sandy parts of it are apt to blow in the summer time, so the farmer has to do his cultivation in the autumn, and, in order to safeguard against blowing in the next summer, he has to have a coat of grass or stubble in the spring. This class of soil is mainly suitable for growing oats. The average yield of oats for past years has been about 28bush., and the price approximately 3s. a bushel. The cost of production to the mill door or on trucks is about £3 per acre, leaving a balance of £1 4s. an acre profit. By sowing oats in the early autumn, to be fed off with sheep, you have a very good prospect of having sufficient feed by the middle of June to carry a ewe and lamb, and quite possibly a balance to fatten more sheep. Early sowing and feeding off has the tendency to encourage the growth of Schank clover, which is a fast grower in the spring and feeds well when dry in the summer. The cost of putting in the green feed would not be so much as for a crop to be harvested. It would be about 18s. per acre. The value of a ewe and lamb is hard to estimate, because they are not sold by weight over the scales (as is done in some other countries), a system which should be introduced here, as the present method of guessing the weight does not encourage the farmer to prime his stock. For comparison, we can estimate wool, lamb and gain in weight of ewe at 30s. per acre. In the one case you are exhausting the land; in the other you are not, and still have the chance of reaping a good crop every fourth year and raising the average from 28bush. to 40bush. an acre, and by so doing your ledger will very nearly balance. By dividing your property into paddocks so that one paddock is harvested every fourth year, you will keep the fertility of the land going, with a chance of improving it.'' Mr. R. P. Pritchard advocated the use of peas on second-class land. Land that had been overworked could be restored by the use of peas, which produced a better crop than oats. The difficulty of harvesting the crop had been overcome. Mr. Curry said it was necessary that something should be done to keep up the fertility of the second-class land. He found that no fodder was equal to speargrass, which grew well in the light soil in the neighborhood of his property at Glenburnie. He had not seen Subterranean clover grown at Glenburnie. Something should be done to enable the land to be rested sufficiently at intervals, in order that it would return to its former fertility. It was only natural that when crop after crop was planted the land became impoverished. Mr. J. H. Buck said a crop of peas served the purpose of maintaining the fertility. There was no need to worry about harvesting them, for sheep could be allowed to graze on the crop. The next year they could be followed with a crop of barley. If the same crops were sown year after year the land would become so poor as to give unpayable results. Mr. G. H. Kilsby said peas as a crop had been neglected in Mount Gambier. In and around the Strathalbyn district extensive use was made of them, and they were excellent for raising sheep. The sheep were turned in on the crops and invariably topped the market when sold. This was the cheapest and easiest method of maintaining the fertility of the land. Mr. A. J. Hemmings said, although some of the soil referred to would be suitable for afforestation purposes, there was a large area of it that was only suitable for growing stringybark, and that only of a quality suited for firewood. Much of the inferior land had been offered to the Department, but on being inspected by the Government experts had been turned down as totally unsuitable for the growing of pines. Still there were large areas that would grow pines. There was a big demand for all timber, but the Department could not, with the limited funds at its disposal, plant more extensively than they had been doing. Timber was a very important item, and all farmers should have their wood lot. Mr. F. C. Beech said the growing of peas on light soil was to be advocated, but it was not possible to plant them in their district until late, on account of the severe frosts. He would also recommend the growing of soy beans, as they were very hardy and made good fodder.

MOUNT SCHANK, May 27th.—The subject ''Silos'' was brought before the meeting by the Chairman (Mr. Swaffer), and a lengthy discussion followed. Mr. Davidson also read a short paper, ''Calf Rearing,'' which provoked an interesting discussion. A further meeting was held on July 27th, at which a paper under the title ''Farming'' was read by Mr. J. Davidson